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The GBESC has two objectives. One is the gathering, organization, and circulation of basic economic data which will advance an understanding of the forces and trends operating in the metropolitan area. The other is to formulate policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

This report is one of the background papers on metropolitan economic information which the Committee has commissioned. The author alone is responsible for its content and conclusions. The GBESC hopes that this and other economic base materials which it publishes will continue to serve the growing need for reliable information on the Boston metropolitan region.

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economic base report NO. 1: THE LABOR FORCE OF GREATER BOSTON

by Dr. Everett J. Burtt, Jr.

Professor of Economics, Boston University

June 1959

greater boston economic study committee

ASSOCIATES OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT 200 BERKELEY STREET, BOSTON 17, MASSACHUSETTS, LIBERTY 2-2146

THE LABOR FORCE OF GREATER BOSTON

This paper describes the labor force of the Greater Boston area in terms of its characteristics by age, sex, and skills and presents projections of its size by sex and age groups for 1960 and 1970.[1]

The labor force of any area comprises the human resources available for productive work at a particular time, and its size and composition set, within broad limits, the extent and nature of the area's economic development.[2] At the same time, it must be recognized that the labor force of an area adjusts itself over periods of time to the extent and structure of the demand for labor. Part I summarizes the principal characteristics of the labor supplies of Greater Boston and

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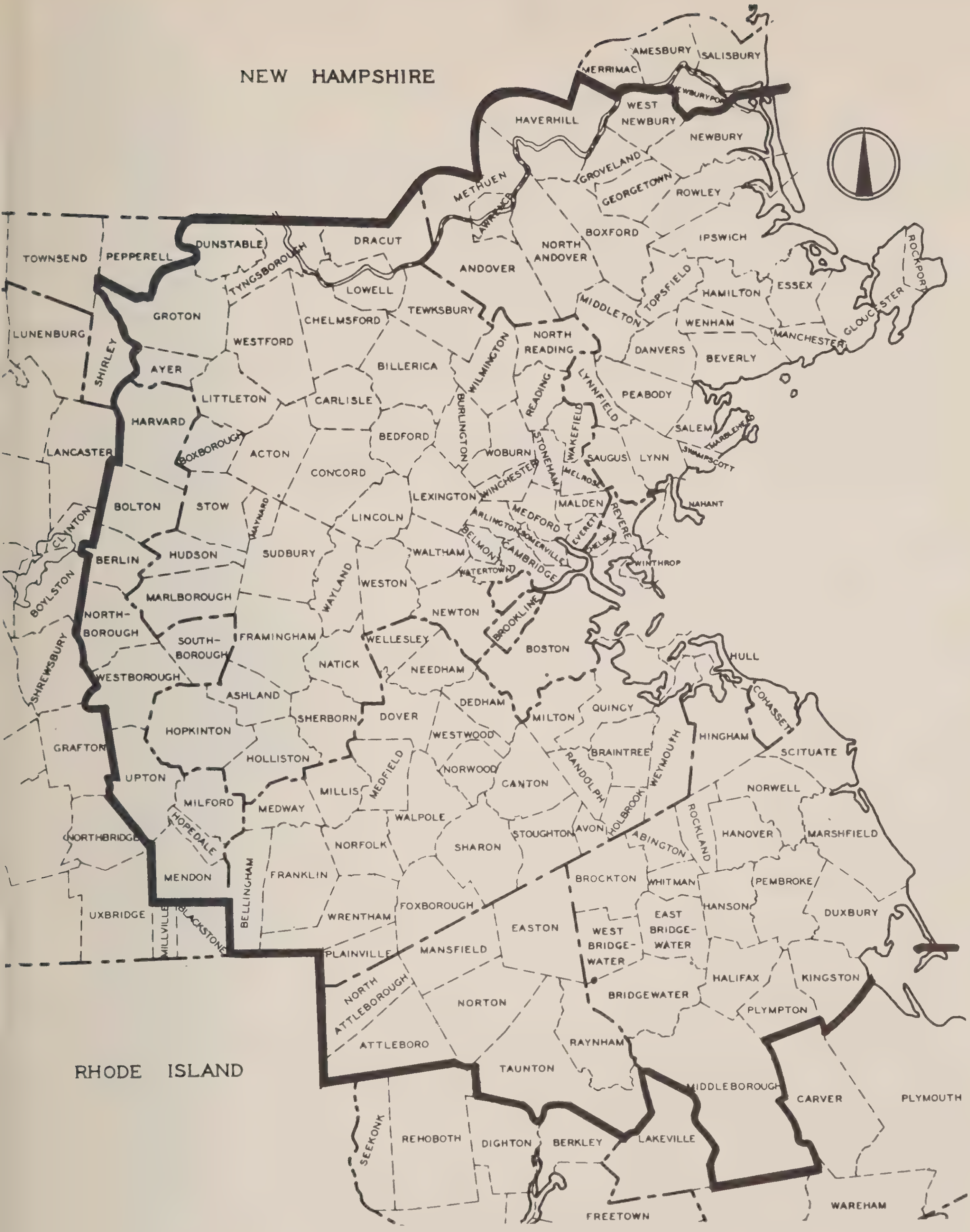
[1] The author wishes to thank Mrs. Phyllis Sweet, Research Assistant for the Greater Boston Economic Study Committee for her work in the preparation of the statistical data of this report. The author also gratefully acknowledges Professor Frank L. Sweetser's comments concerning the interpretation of population statistics.

[2] The term "labor force" as defined by the United States Bureau of the Census, includes that section of the population 14 years of age and over who work or who are looking for work. It excludes those who are inmates of institutions, housewives, students, the retired and totally disabled.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FREETOWN
WAREHAM

study area

reveals how the labor force has, in various ways, been affected by the area's industrial structure.

Projections of the growth of the working population of Greater Boston to 1960 and 1970 are made in Part II. These projections are not predictions, but rather extensions of current trends in population and in the rates at which the population participates in the labor force. Since changes in the demand for labor may influence both labor force participation rates and the extent of migration in or out of the region, the actual size of the labor force at any future time also depends on the pattern of growth in the Greater Boston economy. The projections, therefore, suggest only the types of labor supply characteristics that the area will have in the near future, and indicate that these are likely to be quite different than those of the immediate past. The assumptions underlying these projections are reviewed in Part III.

Although the two elements--labor supplies and labor demands--are to some extent interdependent, it is still true that processes of adjustment of labor supplies to demands are neither quickly nor easily accomplished. The expected rapid growth of Greater Boston's labor force in the decade from 1960 to 1970, presents, therefore, a major challenge to the area's economy, that is to provide a parallel, sharp expansion in job opportunities of the types that will use the growing manpower most efficiently.

I

In view of the importance of labor supplies in affecting, and in turn being influenced by, economic development within an area, it is first necessary to review some of the characteristics of Greater Boston's labor force.

Size

The first of these is that the labor force of Greater Boston included an estimated 1,300,000 workers in 1950, or about two thirds of the civilian labor force of the Commonwealth of Massachusetts.[3] Within the Greater Boston area are the four United States Bureau of the Census Standard Metropolitan Areas (SMA's) of Boston, Brockton, Lawrence and Lowell. The Boston SMA contained nearly one million workers, or three quarters of the Greater Boston's labor force. The second largest concentration, 9 per cent, was northwest of Boston in the two SMA's of Lawrence and Lowell. Another 4 per cent was located in Brockton, while the remaining 13 per cent lived in the remaining cities and towns of Greater Boston.

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[3] The 1950 Census had detailed labor force information for Standard Metropolitan Areas but not for the Greater Boston area as defined here. The Greater Boston Economic Study Committee area comprises 149 cities and towns within a thirty-mile radius of downtown Boston.

TABLE I

THE CIVILIAN LABOR FORCE, 1950

A. Greater Boston and its Standard Metropolitan Areas

Area	Labor Force	Per cent Labor Force
Boston SMA	969,679	74.4
Lawrence SMA	58,890	4.5
Lowell SMA	54,161	4.2
Brockton SMA	51,895	4.0
Other Areas in Greater Boston	168,147	12.9
Greater Boston, Total	1,302,862	100.0

B. The Commonwealth of Massachusetts

Area	Labor Force	Per cent Labor Force
Greater Boston	1,302,862	67.2
Rest of Massachusetts	635,749	32.8
Massachusetts, Total	1,938,611	100.0

Sources: U. S. Census, 1950
G. B. E. S. C. for Other Areas and Greater Boston, Total

Sex Composition

Secondly, the Greater Boston labor force had a higher ratio of women workers than did the nation generally. In 1950, the female

labor force was 32.2 per cent of the total in comparison with the United States average of 27.5 per cent. The difference reflects several factors. One is that Greater Boston, like urban areas generally, has a higher proportion of women in the population than in the United States on the average. A second is the higher participation of Greater Boston women in the labor force than in the United States as a whole, and third, the labor force participation rate of men is lower.[4] While these relationships are typical of urban areas, the particular industry-mix of Greater Boston also helps to explain the high female participation rate. Industries, such as textiles, insurance, and electronics, tend to attract women into the labor force.

The greater-than-average female participation was evident in each of the four SMA's of the Greater Boston area, ranging from 32.4 per cent in the Boston SMA to 42.6 per cent in the Lawrence SMA where the textile industry in 1950 was a particularly heavy employer of female labor. In comparison with six metropolitan areas outside of New England, the labor force participation rate for Boston exceeded St. Louis and the heavy-industry cities of Detroit and Pittsburgh but was less than the rates for Chicago, New York-New Jersey, and the Cleveland metropolitan areas.

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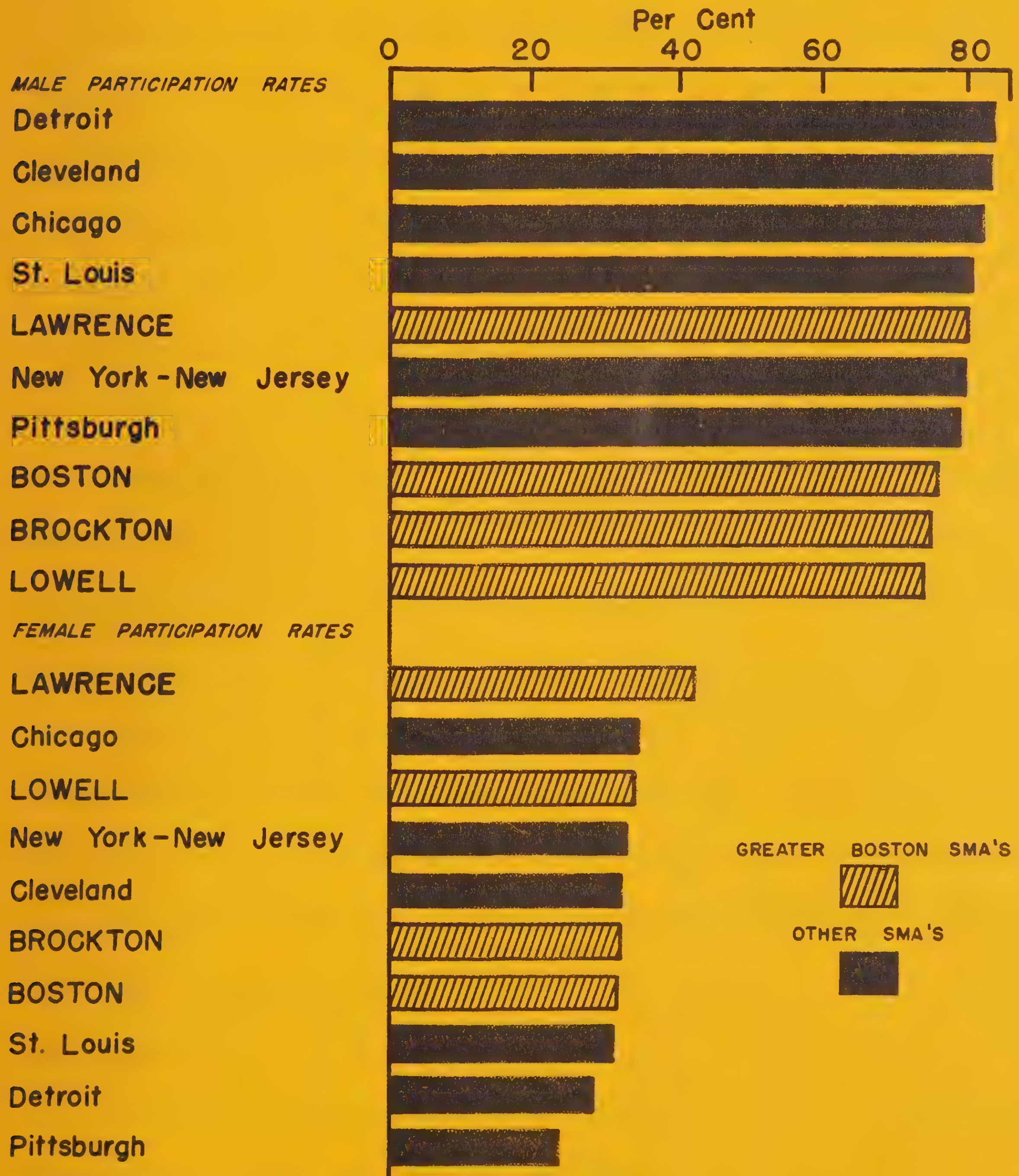
[4] The labor force participation rate is the ratio of persons in the labor force to persons in the same age and sex classification both in and outside of the labor force. Participation rates by age group are shown in Tables I and II of the Appendix.

LABOR FORCE PARTICIPATION RATES, 1950

In Selected Standard Metropolitan Areas



SOURCE: APPENDIX, TABLES I & II.

Lawrence had the highest female participation rate not only of the ten SMA's compared here, but of all the 151 SMA's in the United States.

Male participation rates in Greater Boston were relatively low, ranging from 74.2 per cent in Lowell to 80.0 per cent in Lawrence. The male rates in the six SMA's outside of New England exceeded those of all but one of the four Greater Boston SMA's. The difference is particularly striking in comparison with Detroit and Cleveland where the rates were 83.5 and 83.3 per cent, respectively.

There are several explanations of the low male participation rate in Greater Boston. In the Boston SMA, a high percentage of young males goes to schools and universities. This is reflected statistically in lower participation rates for males in ages under 25, since students are not part of the labor force, though they are considered to be residents of the area where their schools are located. In Lowell, however, lower participation rates are found in the upper age brackets of 55 and over. This may reflect the withdrawal from the labor force of older textile workers who have been unemployed for so long that they consider themselves retired.

Age Composition

A third characteristic of the labor force of Greater Boston is that it is older on the average than the nation's working population. A

cumulative percentage distribution shows that 82.8 per cent of the labor force in Greater Boston was over twenty-five years of age in 1950 as compared with 81.5 per cent in the nation; locally, 28.3 per cent was over fifty, as against 24.8 per cent nationally. This pattern is maintained when the male and female components of the labor force are examined separately. However, the per cent distribution by age presented in Table III of the Appendix shows the greatest deviation from the national pattern for males is in the younger age groups, while for females, it is in the older ages.

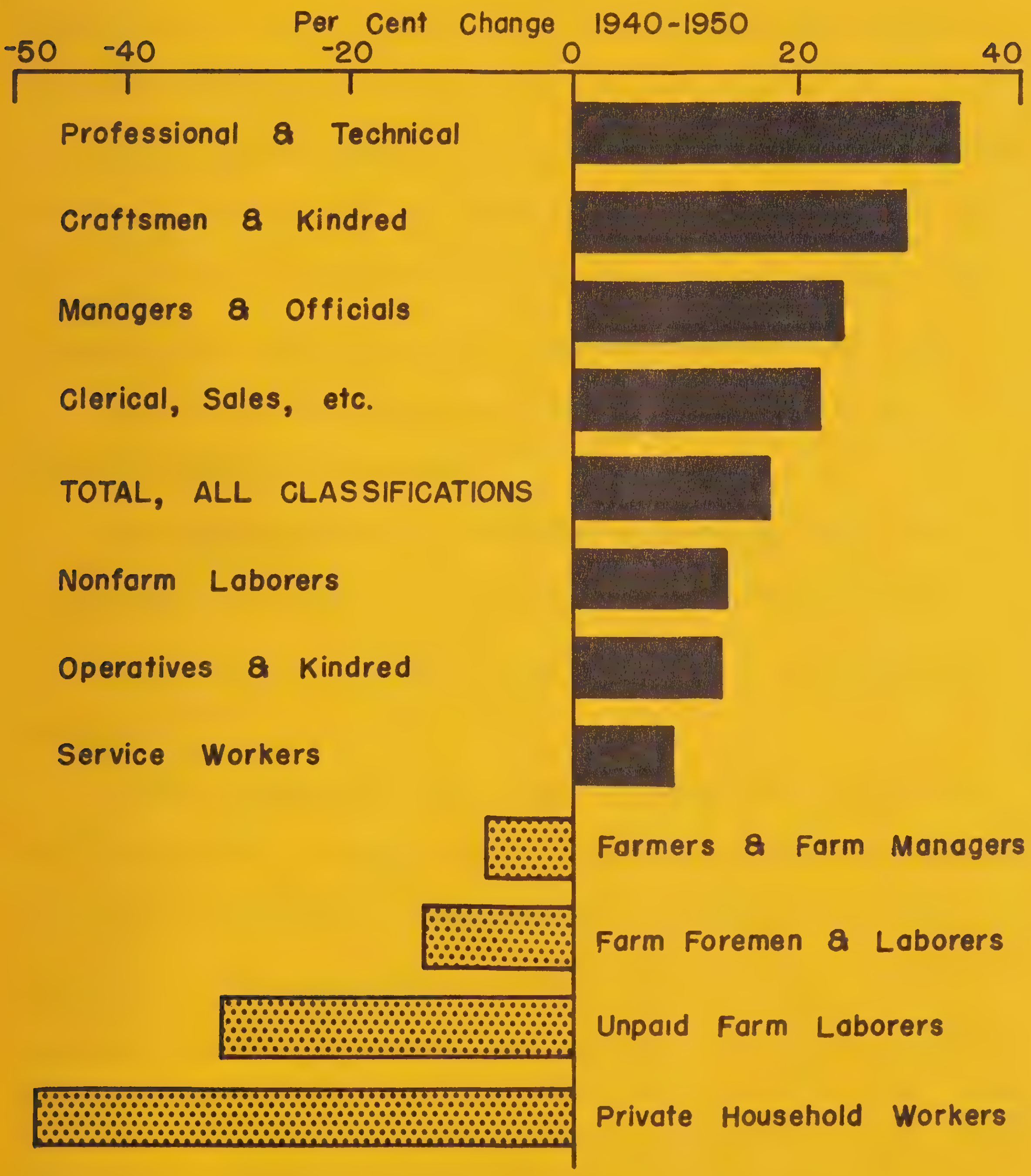
For the most part, it is the age structure of the area's population which explains the older character of the labor force, but there are two additional considerations. One, mentioned above, is the relatively lower participation rates for males in the younger age groups due to the large resident college population. The other is the fact that women's participation rates are higher than the national average in the 45 to 64 year age groups. Although the evidence is not wholly conclusive, there seems to be a greater willingness of employers in this area to hire "older women" than elsewhere.

Occupational Composition

A fourth characteristic of the Greater Boston labor force is that the "professional and technical" occupational category experienced a

CHANGES IN THE LABOR FORCE OF THE GREATER BOSTON LABOR AREA

(By Occupation Classifications)



SOURCE: APPENDIX, TABLE IV.

34.6 per cent gain between 1940 and 1950. As shown in Table IV, appended, this rate of growth was twice that for all employment. For males alone this category increased 48.9 per cent, or three times as fast as all male employment.

Other classes experiencing higher than average rates of growth were "managers" and "craftsmen" though the high rate of expansion in these cases was due mainly to the large increases for women. In the managers and craftsmen categories, female employment increased 52.3 and 70.8 per cent, respectively, as against a rate of 22.1 per cent for female employment generally.

The growing importance of women in the labor force is also shown by the fact that the expansion of women employed grew from 1940 to 1950 at a rate of almost one and a half times the rate of male employment.[5]

Table V, appended, shows that the Boston SMA with 12.1 per cent of its workers in the professional, technical and kindred workers class exceeds all of the six SMA's outside of New England selected for comparison. The Boston SMA also had a relatively high proportion of its workers employed in "sales" and "service except private household"

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[5] These trends paralleled national changes. See Kaplan, D. L., and Casey, M. C., Occupational Trends in the United States, 1900 to 1950, U. S. Bureau of Census, Working Paper No. 5, 1958, Table **3**, p. 8.

activities but a low proportion employed as "operatives and kindred workers." This occupational pattern reflects the structure of the industry of the Boston SMA and its heavy emphasis on the production of services in contrast to the production of goods, and indicates the nature of the skills and abilities that have been developed in the working population.[6]

II

Significant changes are anticipated in the labor force of Greater Boston in the period from 1950 to 1970.

Characteristics

First and foremost is the sharp rise in the total, particularly in the decade from 1960 to 1970. Of the growth from 1,300,000 workers in 1950 to over 1,500,000 in 1970, two thirds, or about 135,000 workers, will be added in the decade of the 1960's. This expansion compares with the estimated 75,000 workers to be added by 1960 and with the actual increase of only 44,500 workers by which the labor force grew between the census years of 1940 and 1950. The sizeable spurt in size during the next decade will stem from the entry into the labor market of the large post-World War II "baby crop".

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[6] "Employment Trends in Greater Boston" a second paper in this series, forthcoming.

TABLE II

THE CIVILIAN LABOR FORCE OF GREATER BOSTON
1940, 1950 AND PROJECTED 1960 AND 1970

A. The Distribution of Labor Force by Sex

Year	Male	Female	Total
1940	869,600	388,800	1,258,400
1950	883,100	419,800	1,302,900
1960	892,100	486,400	1,378,500
1970	943,400	569,700	1,513,100

B. Per Cent Distribution of the Labor Force by Sex

Year	Male	Female	Total
1940	61.9	30.9	100.0
1950	67.8	32.2	100.0
1960	64.7	35.3	100.0
1970	62.3	37.7	100.0

C. Per Cent Additions to the Labor Force by Sex

Decade	Male	Female	Total
1950-1960	11.9	88.1	100.0
1960-1970	38.1	61.9	100.0

Sources: U. S. Census and G.B.E.S.C.

A second characteristic of the future labor force will be the steadily increasing percentage of females. Estimates indicate the proportions increasing to 35.3 per cent in 1960 and to 37.7 per cent in 1970. This is a rise of 3.1 and 5.5 percentage points, respectively, over 1950. In the decade 1950-1960, 88 of every 100 additions are expected to be female. During the 1960's, however, the additions to the labor force will be more evenly balanced between males and females at a ratio of about 38 to 62.

Thirdly, the age structure of the labor force will fluctuate somewhat. By 1960 the Greater Boston labor force will, on the average, be considerably older than in 1950. This reflects a reduced number of new labor market entrants in this decade due to the low birth rates of the 1930's. In fact, there will be a drop of about 33,500 males in the 20 to 35 year age group. Labor force growth in this decade will, therefore, be due primarily to increases in the middle age brackets, 35 to 44 for men, and 35 to 64 for women. Most of this expansion has already taken place.

By 1970, the Greater Boston labor force will have become younger, since the large numbers of youths now in schools will have begun to enter the labor market. Between 1960 and 1970, it is anticipated that nearly 50,000 males under the age of 35 will be added. There is also expected

to be moderate additions at the age levels of 45-64. However, at the middle level of 35-44 years of age, there will be a decline in the number of males. Similar trends are expected for females, although the gains will tend to be more evenly distributed among the age groupings. The projections by age groups and sex are shown in Table VI in the Appendix.

The Implications of These Trends

The anticipated growth of Greater Boston's labor force has several implications for the area's economic development. The first of these is that a sharp increase in the rate of expansion of employment opportunities must occur in the coming decade if substantial unemployment, outmigration, or both are to be avoided. The labor supplies for industrial growth will be available for Greater Boston firms; but if new jobs are not forthcoming, the area may face growing unemployment, especially among its youth, and the gradual drifting of workers to areas of better opportunity elsewhere.

Efficient use of the expected increases in labor, particularly during the 1960's, will probably require expanded training programs, since the bulk of the additions will be in the younger age groups. If industry is to be assured of the types and levels of skills that it will require, it may be necessary to undertake these training programs in the immediate future.

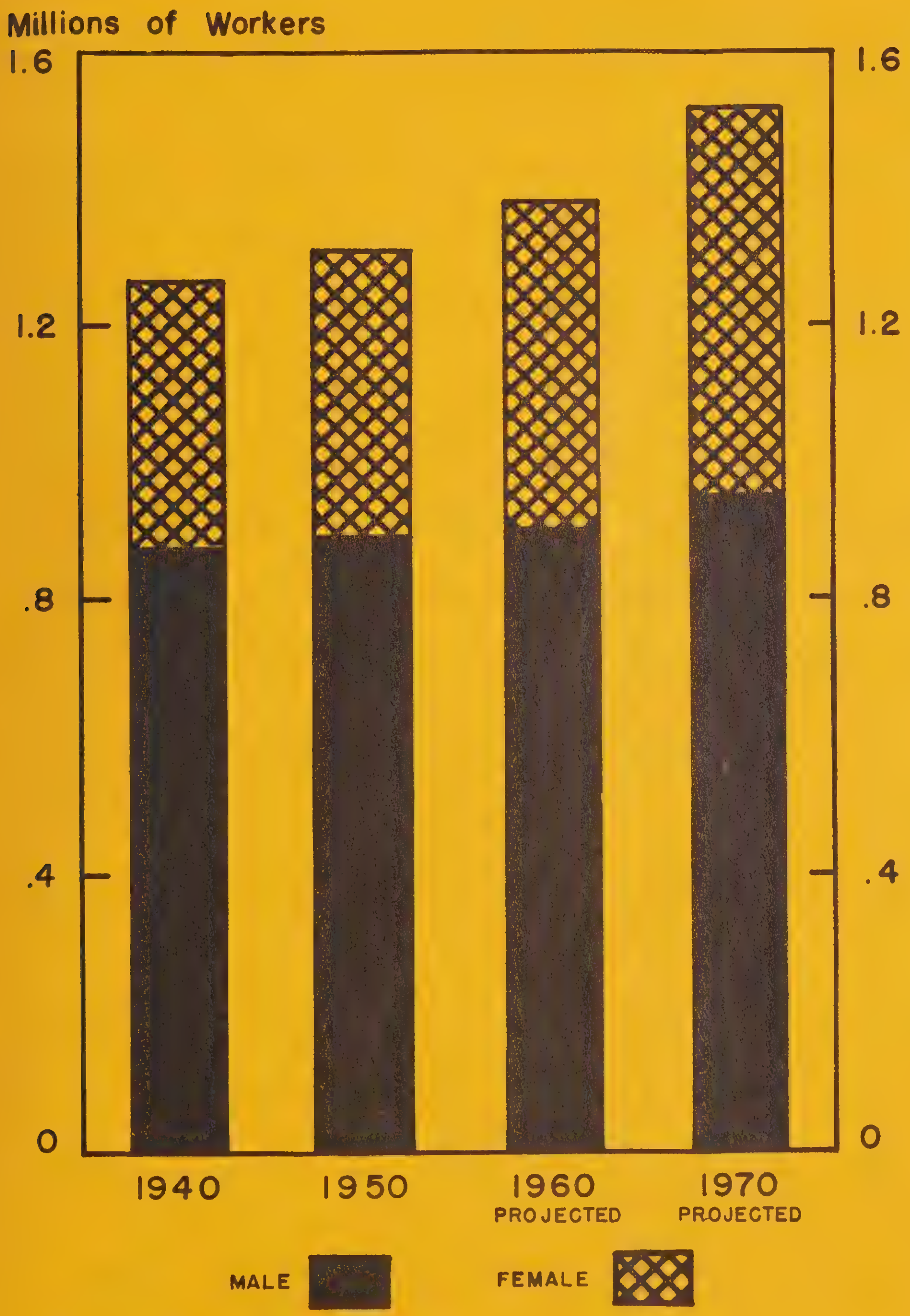
A further aspect of the changing structure of the labor force by 1970 is the anticipated drop in the number of males from the ages of 35 to 44 and the slight growth, 0.9 per cent, in the 25 to 34 age group. In view of the fact that these ages contribute heavily in administration, scientific and technical professions, a serious gap in these types of manpower resources may be developing. This may raise problems with regard to the future rate of technological change and scientific development.

A final implication is that rising rates of labor turnover are to be expected, because of the relative importance of youth and women in the labor force and the likely growth of part-time workers, especially among the female labor force. Rising quit rates, which would be in reversal of recent trends, and the necessity of making provisions for part-time employment, are likely to impose increasing burdens on the productive efficiency of business firms.

III

Labor force projections cannot be understood except in terms of the assumptions on which they are based. It is therefore, important to review those which underlie the projections for Greater Boston. As the projections are made by applying estimated future participation rates to estimated future populations, the assumptions concern these two factors.

CIVILIAN LABOR FORCE OF GREATER BOSTON



SOURCE: APPENDIX, TABLE II.

Participation Rate Assumptions

Assumptions concerning future labor force participation rates are intricate because they reflect a variety of influences--economic, legal, social--which cannot be readily isolated. In making the Greater Boston projections, it was assumed that the local participation rates would take on the same pattern of change as the national rates. Nationally, the significant historical trends have been threefold: declining participation rates for the younger age groups, declining rates for older workers, and increasing rates for women workers.

The first reflects the trend towards a longer period of education for young people. The second is closely associated with the rise of public and private old age insurance programs. The third stems from a variety of influences, such as changes in the types of labor demanded by modern industry especially in clerical occupations, the easing of work in the home through mechanization and the availability of processed foods, and changes in the social attitudes toward working women.

National projections of these rates to 1960 and 1970 have assumed that present trends will be continued.[7] For the youngest male age group, a substantial decline in the participation rate from 1950 to 1960 and a

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[7] Cooper, Sophia, "Labor Force Projections to 1975," Monthly Labor Review, December, 1957.

modest but continuing fall to 1970 is anticipated as youth continues to seek higher levels of education. Some reduction will also be caused by continued migration from farm to city where participation rates are lower. Recognition was given to counter-influences such as the larger number of students of college age who seek part-time jobs and the trends towards earlier marriages and childbearing that tend to reduce female participation rates. But the impact of these is considered insufficient to reverse present trends.

Two problems arise from the simple assumption that changes in national rates will also be experienced in Greater Boston. One is the fact that in 1950 participation rates for young males in Greater Boston were already considerably below national rates. If the rates for males do not fall as rapidly in Greater Boston as they do nationally, then Greater Boston projections will understate somewhat the number of males. The other is that participation rates for women in this area are already above national levels. Similarly, if female rates do not continue to rise as fast as in the nation, then the number of females added to the projected labor force of Greater Boston will be somewhat overstated.

Should any overstatement for females and understatement for females and understatement for males occur, they will tend to cancel each other out. As a result, errors in the projected total labor force arising from inaccurate participation estimates will be small.

Population Assumptions

With respect to the projected population structure, it was necessary to make assumptions concerning future survival rates, and the pattern of in- and out-migration. Changes in birth rates, although they may affect the propensity of married women to participate in the labor force, will not affect the population age 14 and over. As for death rates, it was assumed that they will remain relatively unchanged.[8] Thus, there were no unusual difficulties inherent in the treatment of survival rates.

Certain difficulties which are not so readily overcome do, however, arise in the treatment of migration in or out of a region. A change in migration patterns will affect the size and composition of the population and hence labor supplies. In the population projection for Greater Boston, the migration pattern of the 1940's was assumed to continue during the subsequent two decades to 1970. That pattern indicated a small net in-migration of about 17,000 persons, but an out-migration of workers, although the latter cannot be precisely measured. Most of the male in-migrants during the 1940's were 65 years of age and over, while over half of those who left were in the high labor force participation age groups of 20 to 39. Of the female in-migrants, nearly half were 65 years of age and over and therefore, mostly out of the labor force. There was a net in-migration

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[8] G. B. E. S. C., Population Report, unpublished.

in the 15-29 year age group for women. While this group undoubtedly contributed to the area's labor supply, they only partially offset the loss due to the out-migration of young males.

Although there are no statistics of recent migration patterns for Greater Boston, there is some evidence that the area's labor force may be increasing more rapidly than is assumed by the 1960 projection. The record of job expansion in the Greater Boston area, indicates that nearly 300,000 more workers were employed in the spring of 1957 than in April 1940. The estimated 45,000 growth in the labor force during the 1940's and 50,000 to 55,000 growth from 1950 to 1957 would account for only about 100,000 of these. Another 175,000 can at most be accounted for by a decline in unemployment in the period. This leaves a residual increase of roughly 25,000 workers to account for.

How the number of jobs could expand more rapidly than the labor force can be explained in several ways. There may have been a rise in multiple job holding. The 1940 and 1950 Census data used to make the population estimates counts people, while the employment data counts the number of jobs. An increase in the number of workers who hold two or more jobs--an increase that has occurred nationally--would help to explain some of the discrepancy. A second possibility is that workers who live outside the Greater Boston area are now commuting to

jobs within the area. The greatest growth of jobs within Greater Boston has taken place in the intermediate ring around Boston, roughly coincident with Route 128. Activity located there could readily draw on commuters living outside of Greater Boston. Finally, there is the third possibility that labor force participation rates, especially for women, have been rising more rapidly than has previously been assumed.

Since there is some doubt that these three factors can explain the understatement in labor force, the remaining consideration is that the migration pattern of the 1940's may have been modified during the 1950's. There is even the possibility that some in-migration in those age groups which affect the labor force has taken place. If this has, in fact, been occurring, then the labor force projections based on 1940 population migration assumptions will understate somewhat the growth of the labor force in this area.

Although the change in the size of the projected labor force resulting from an altered migration pattern may be small, the problem points out an important characteristic of labor force projections. As noted above, these are based on existing trends in population growth and participation rates. But these may be modified by the demand for labor itself. An expanding demand for labor may draw workers into an area, while a slowing down of business growth may lead to unemployment

and out-migration. Thus a key factor in the future size of the labor resources of Greater Boston may well be the rate of business growth itself.

APPENDIX OF TABLES

TABLE I

MALE LABOR FORCE PARTICIPATION RATES BY AGE GROUP FOR THE FOUR SMA'S OF GREATER BOSTON AND FOR SIX OTHER SMA'S. 1950

Age Group	Boston	Brockton	Lawrence	Lowell	N Y. N. J.	Cleveland	St. Louis	Detroit	Pittsburgh	Chicago
14-19	28.6	27.[illegible]	30.9	30.9	27.5	36.9	37.1	36.9	29.1	35.4
20-24	69.8	76.4	79.3	77.7	78.7	84.4	83.0	86.5	79.8	83.8
25-29	85.8	89.6	90.5	91.2	90.1	92.8	90.6	93.1	90.3	91.2
30-34	92.8	93.2	96.5	94.2	93.6	96.0	93.5	95.4	94.5	94.4
35-44	94.5	91.4	97.1	93.3	94.3	96.0	94.1	95.3	95.1	95.1
45-54	92.3	86.6	95.7	89.3	92.2	94.4	92.2	93.3	93.1	93.6
55-64	85.4	81.2	88.0	78.8	84.7	87.9	84.7	86.6	85.4	87.0
65-74	50.6	51.9	52.5	37.7	51.6	55.2	52.2	54.1	46.6	53.3
Over 74	17.8	17.8	14.1	9.0	16.5	17.6	19.0	16.0	16.8	17.9
All Males	76.2	74.8	80.0	74.2	79.9	83.3	80.1	83.5	78.9	82.1

Source: U. S. Census, 1950

TABLE II

FEMALE LABOR FORCE PARTICIPATION RATES BY AGE GROUP FOR THE FOUR SMA'S OF GREATER BOSTON AND FOR SIX OTHER SMA'S, 1950

Age Group	Boston	Brockton	Lawrence	Lowell	N. Y.- N. J.	Cleveland	St. Louis	Detroit	Pittsburgh	Chicago
14-19	27.9	25.3	30.5	33.0	28.8	29.4	28.4	26.2	24.3	29.9
20-24	57.2	51.2	63.3	61.1	58.9	53.4	47.7	45.5	46.6	54.7
25-29	38.0	35.8	51.0	42.1	39.6	37.3	35.8	32.8	28.6	39.2
30-34	31.8	32.8	47.0	37.5	33.1	33.3	33.1	30.6	23.2	35.7
35-44	35.1	37.4	52.8	39.5	36.7	36.9	36.7	32.8	26.0	39.9
45-54	36.5	42.3	52.8	37.8	34.9	34.9	34.0	28.8	23.1	37.2
55-64	28.5	33.8	39.0	27.6	24.5	24.2	25.9	19.7	16.5	27.1
65-74	13.3	14.2	13.4	9.7	10.9	11.4	11.5	9.0	7.7	11.8
Over 74	2.7	3.1	2.6	1.3	2.8	3.1	3.1	2.3	1.9	2.8
All Females	32.4	32.6	42.6	34.4	33.3	32.6	31.5	29.3	24.4	34.8

Source: U. S. Census, 1950

TABLE III

PER CENT DISTRIBUTION OF THE GREATER BOSTON AND UNITED STATES LABOR FORCE, BY AGE AND SEX, 1950

Age Group	Male		Female		Total	
	U.S.	Greater Boston	U.S.	Greater Boston	U.S.	Greater Boston
14-19	5.8	4.0	8.7	8.3	6.6	5.4
20-24	10.6	9.5	15.4	16.5	11.9	11.8
25-29	12.4	12.0	12.4	11.5	12.4	11.8
30-34	12.2	12.2	11.0	9.6	11.8	11.2
35-39	12.0	11.4	11.8	9.8	11.9	11.0
40-44	10.9	10.9	11.3	10.3	11.0	10.7
45-49	9.7	9.9	9.5	9.6	9.6	9.8
50-54	8.5	9.4	7.6	8.8	8.3	9.2
55-59	7.1	8.3	5.6	6.7	6.7	7.8
60-64	5.4	6.4	3.7	4.9	5.0	5.9
65-69	3.3	3.7	2.0	2.7	3.0	3.4
70-74	1.4	1.5	0.7	0.9	1.2	1.3
Over 74	0.7	0.8	0.3	0.4	0.6	0.7
All Ages	100.0	100.0	100.0	100.0	100.0	100.0

Sources: U. S. Census, 1950 and G. B. E. S. C.

TABLE IV

PER CENT CHANGE BY OCCUPATIONAL CLASSIFICATION, BY SEX IN THE LABOR FORCE OF THE GREATER BOSTON LABOR AREA,* 1940 to 1950

Occupational Classification	Per Cent Change Male	 Female	 Total
Professional, technical & kindred	48.9	17.4	34.6
Farmers and farm managers	-9.1	23.1	-7.6
Managers, officials, proprietors, exc. farm	21.1	52.3	24.0
Clerical, sales and kindred workers	3.1	43.6	21.8
Craftsmen, foremen, kindred workers	28.5	70.8	29.8
Operatives and kindred workers	6.9	26.2	13.1
Private household workers	-38.2	-48.7	-48.1
Service workers, exc. private household	7.1	12.2	8.9
Farm laborers, unpaid family workers	-39.0	10.0	-13.2
Farm foremen and laborers, exc. unpaid	-17.8	262.0	-13.1
Laborers, exc. farm and mine	12.1	54.2	13.6
Occupation not reported	16.2	17.0	16.5
All Classifications	15.4	22.1	17.5

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* The Greater Boston "Labor Area" is slightly smaller than the GBESC Study Area and was devised to afford maximum use of the statistical data available in the 1940 and 1950 U. S. Censuses.

Sources: U. S. Census and G. B. E. S. C.

TABLE V

PER CENT DISTRIBUTION OF OCCUPATIONAL CLASSIFICATIONS FOR SELECTED STANDARD METROPOLITAN AREAS, 1950

Occupational Classification	Boston	Chicago	Cleveland	Detroit	N. Y. N. J.	Pittsburgh	St. Louis
Professional technical and kindred	12.1	9.7	10.2	8.7	10.9	9.2	8.7
Farmers and farm managers	0.2	0.5	0.3	0.4	0.2	0.6	1.2
Managers, officials, proprietors, exc. farm	9.7	9.2	9.0	8.0	11.6	7.4	8.9
Clerical and kindred	17.9	18.2	16.0	14.4	17.9	14.5	16.9
Sales workers	8.6	7.2	7.9	7.2	7.6	7.6	7.7
Craftsmen, foremen & kindred	14.9	16.1	17.1	17.7	13.4	17.1	14.8
Operatives and kindred	19.4	21.8	22.7	27.5	21.1	21.4	21.7
Private household workers	1.9	1.5	1.9	1.7	2.5	1.6	2.2
Service workers exc private household workers	9.4	8.7	8.1	8.0	9.1	7.9	8.5
Farm laborers and foremen	0.3	0.3	0.3	0.3	0.2	0.6	0.6
Laborers, exc. farm and mine	4.7	5.8	5.6	5.0	4.4	11.0	7.1
Occupation not reported	0.9	1.0	0.9	1.1	1.1	0.9	1.7
Total Employed	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: U. S. Census, 1950.

TABLE VI

THE LABOR FORCE OF GREATER BOSTON BY AGE GROUP AND SEX
1950, AND PROJECTED 1960 AND 1970
(in thousands of persons)

Age Group	Male			Female			Total		
	1950	1960	1970	1950	1960	1970	1950	1960	1970
14-19	36.0	40.8	49.3	34.9	39.0	47.1	70.9	79.8	96.4
20-24	84.0	70.3	109.0	69.2	57.0	87.7	153.2	127.3	196.7
25-34	212.2	192.4	194.2	88.5	89.7	90.9	300.7	282.1	285.1
35-44	197.3	216.6	195.7	84.5	98.1	97.6	281.8	314.7	293.3
45-54	170.6	178.1	197.0	77.3	105.8	126.2	247.9	283.9	323.2
55-64	129.9	130.6	137.6	48.5	72.8	90.5	178.4	203.4	228.1
Over 64	53.1	63.3	60.6	16.9	24.0	29.7	70.0	87.3	90.3
All Ages	883.1	892.1	943.4	419.8	436.4	569.7	1,302.9	1,328.5	1,513.1

Sources: U. S. Census and G. B. E. S. C.

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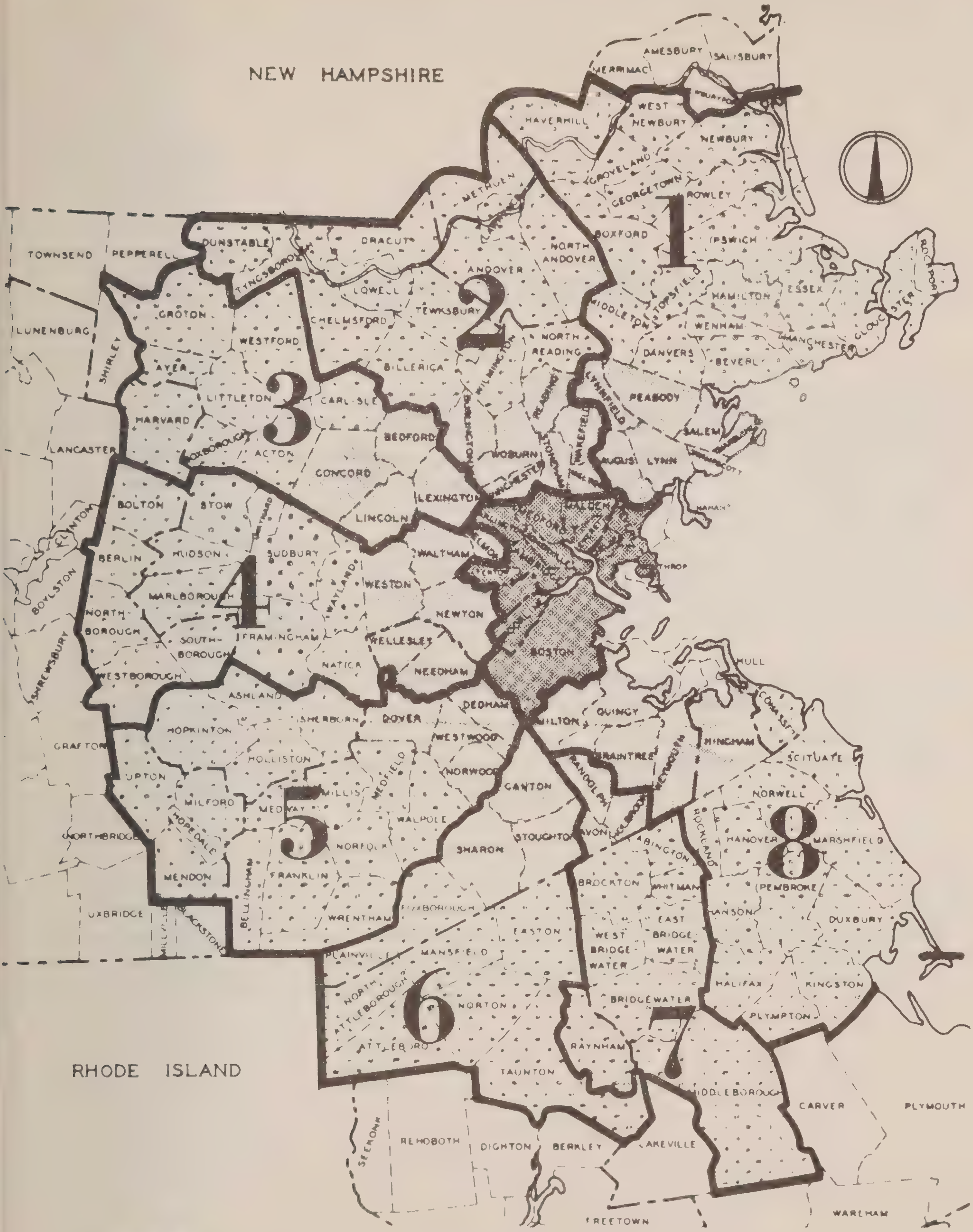
THE POPULATION OF THE CITIES AND TOWNS IN THE GBESC STUDY AREA: 1950, 1960, PROJECTED 1970

City or Town	US Census 1950	US Census 1960	GBESC Projection 1970
Acton	3,510	7,238	11,500
Arlington	44,353	49,953	54,000
Ashland	3,500	7,779	13,500
Bedford	5,234	10,969	18,000
Bellingham	4,100	6,774	9,500
Belmont	27,381	28,715	30,000
Boston	801,444	697,197	630,000
Boxborough	439	744	1,200
Brookline	57,589	54,044	51,000
Burlington	3,250	12,852	22,000
Cambridge	120,740	107,716	98,000
Canton	7,465	12,771	18,000
Chelsea	38,912	33,749	28,000
Concord	8,623	12,517	15,500
Dedham	18,487	23,869	26,000
Dover	1,722	2,846	4,200
Everett	45,982	43,544	41,000
Foxborough	7,030	10,136	13,000
Framingham	28,086	44,526	62,000
Franklin	8,037	10,530	13,000
Holliston	3,753	6,222	8,500
Hudson	8,211	9,666	11,000
Lexington	17,335	27,691	38,000
Lincoln	2,427	5,613	8,000
Malden	59,804	57,676	55,000
Mansfield	7,184	7,773	8,500
Maynard	6,978	7,695	8,000
Medfield	4,549	6,021	7,500
Medford	66,113	64,971	62,000
Medway	3,744	5,168	6,500
Millis	2,551	4,374	6,500
Milton	22,395	26,375	30,000
Natick	19,838	28,831	36,000
Needham	16,313	25,793	32,000
Newton	81,994	92,384	95,000
Norwood	16,636	24,898	33,000
Plainville	2,088	3,810	6,000
Revere	36,763	40,080	41,000
Sharon	4,847	10,070	17,500
Sherborn	1,245	1,806	2,500
Somerville	102,351	94,697	88,000
Stow	1,700	2,573	4,000
Sudbury	2,596	7,447	12,000
Walpole	9,109	14,068	20,000
Waltham	47,187	55,413	59,000
Watertown	37,329	39,092	40,000
Wayland	4,407	10,444	17,000
Wellesley	20,549	26,071	28,000
Weston	5,026	8,261	10,500
Westwood	5,837	10,354	15,000
Winchester	15,509	19,376	23,500
Winthrop	19,496	20,303	21,000
Wrentham	5,341	6,685	8,500

THE POPULATION OF THE CORE CITIES, INNER BAND, OUTER BAND, AND SECTORS OF THE GBESC STUDY AREA: 1950, 1960, AND PROJECTED 1970

Cities and Towns in	Definition of the Region	U.S. Census 1950	U.S. Census 1960	GBESC Projected 1970
The Core	12 central cities	1,430,876	1,303,022	1,209,000
Inner Band	41 cities and towns	817,469	1,028,497	1,190,700
Outer Band	96 cities and towns	882,973	1,104,818	1,338,300
Totals	149 cities and towns	3,131,318	3,436,337	3,738,000
……				
Sector 1	along the North Shore	365,988	411,792	457,300
Sector 2	between Routes 28 and 3	386,992	459,881	534,200
Sector 3	along Route 2	57,667	99,024	133,300
Sector 4	between Routes 20 and 9	301,587	389,926	457,700
Sector 5	between Routes 16 and 109	117,997	164,728	211,700
Sector 6	along Route 1 south	126,469	159,811	199,000
Sector 7	between Routes 18 and 28 south	125,650	163,901	196,500
Sector 8	along the South Shore	218,092	284,252	339,300

Core, Sectors, Inner and Outer Bands of the GBESC Study Area



▩ CORE: 12 cities and towns

☐ INNER BAND: 41 cities and towns

⁘ OUTER BAND: 96 cities and towns

GREATER BOSTON ECONOMIC STUDY COMMITTEE

The Greater Boston Economic Study Committee (GBESC) was organized in 1957. The Committee presently has eighteen members--fifteen are businessmen, one is a newspaper editor, and two are the deans of schools of business administration. To help guide the work of the Committee, a Research Advisory Committee was appointed. This group consists of leading scholars and experts in metropolitan affairs. In 1959, the GBESC became Associates of the Committee for Economic Development (CED). The GBESC feels that this association has helped to broaden its own metropolitan program and organization.

The GBESC has two objectives. One is the gathering, organization, and circulation of basic economic data which will advance an understanding of the forces and trends operating in the metropolitan area. The other is to formulate policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

This report is one of the background papers on metropolitan economic information which the Committee has commissioned. The author alone is responsible for its content and conclusions. The GBESC hopes that this and other economic base materials which it publishes will continue to serve the growing need for reliable information on the Boston metropolitan region.

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economic base report 2 the population of greater boston projected to 1970

by Frank L. Sweetser

Professor of Sociology

Boston University

June 1959

greater boston economic study committee

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THE POPULATION OF GREATER BOSTON PROJECTED TO 1970*

Understanding population, its composition and growth, is basic to developmental planning by business, government, and the community at large. People provide the labor supply on which all economic activity depends. People provide the market for which all distribution and consumption must be calculated.

This paper projects the population of the Greater Boston Economic Study Committee area, Greater Boston for purposes of this report, to 1970 by broad age and sex groupings.[1] Because of the complexities of internal migration, differences among the towns in fertility rates and variations in the age-sex structure of towns, the projected growth trends of the area as a whole have not been used to estimate future population by town. However, this task has been completed for the sixty-five cities and towns which comprise the Boston Standard Metropolitan Area, and the findings are useful in the present analysis.[2]

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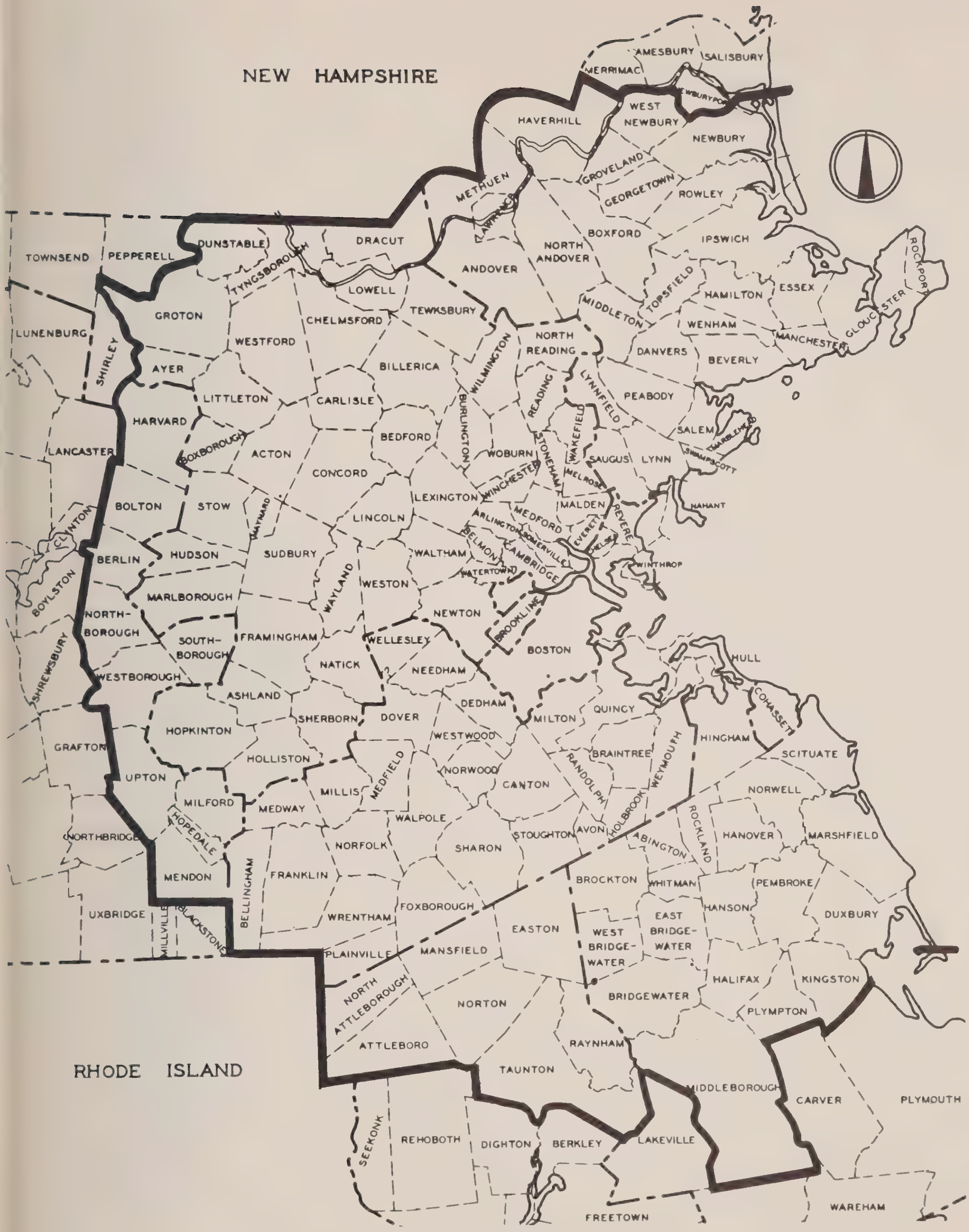
* The author wishes to thank Mrs. Phyllis Sweet, Research Assistant of the Greater Boston Economic Study Committee for the preparation of the statistical data used in this report.


NEW HAMPSHIRE
AMESBURY
SALISBURY
MERRIMAC
NEWBURYPORT
WEST NEWBURY
HAVERHILL
NEWBURY
GROVELAND
GEORGETOWN
ROWLEY
METHUEN
LAWRENCE
BOXFORD
IPSWICH
ROCKPORT
TOWNSEND
PEPPERELL
DUNSTABLE
TYNGSBOROUGH
DRACUT
NORTH ANDOVER
ANDOVER
LOWELL
TOPSFIELD
HAMILTON
ESSEX
GLOUCESTER
TEWKSBURY
MIDDLETON
WENHAM
GROTON
CHELMSFORD
LUNENBURG
WESTFORD
NORTH READING
MANCHESTER
DANVERS
BEVERLY
SHIRLEY
WILMINGTON
BILLERICA
AYER
LITTLETON
CARLISLE
BURLINGTON
READING
LYNNFIELD
PEABODY
HARVARD
WAKEFIELD
SALEM
MARBLEHEAD
BEDFORD
BOXBOROUGH
LANCASTER
ACTON
WOBURN
STONEHAM
SAUGUS
LYNN
SWAMPSCOTT
CONCORD
MELROSE
WINCHESTER
LEXINGTON
MALDEN
NAHANT
BOLTON
STOW
MAYNARD
LINCOLN
MEDFORD
REVERE
CLINTON
ARLINGTON
SOMERVILLE
EVERETT
CHELSEA
BELMONT
HUDSON
SUDBURY
WALTHAM
CAMBRIDGE
BERLIN
WINTHROP
WATERTOWN
BOYLSTON
WAYLAND
WESTON
MARLBOROUGH
NEWTON
NORTHBOROUGH
BROOKLINE
SOUTHBOROUGH
FRAMINGHAM
WELLESLEY
BOSTON
SHREWSBURY
NATICK
HULL
NEEDHAM
WESTBOROUGH
ASHLAND
COHASSET
DEDHAM
QUINCY
SHERBORN
DOVER
MILTON
HOPKINTON
WESTWOOD
HINGHAM
GRAFTON
HOLLISTON
BRAINTREE
SCITUATE
RANDOLPH
WEYMOUTH
UPTON
NORWOOD
MEDFIELD
MILLIS
CANTON
NORWELL
MILFORD
MEDWAY
WALPOLE
HOLBROOK
HOPEDALE
SHARON
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AVON
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HANOVER
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NORTHBRIDGE
NORFOLK
ABINGTON
MENDON
BELLINGHAM
FRANKLIN
BROCKTON
WHITMAN
PEMBROKE
UXBRIDGE
MILLVILLE
BLACKSTONE
WRENTHAM
FOXBOROUGH
HANSON
DUXBURY
EAST BRIDGE-WATER
EASTON
WEST BRIDGE-WATER
PLAINVILLE
MANSFIELD
HALIFAX
KINGSTON
NORTH ATTLEBOROUGH
NORTON
BRIDGEWATER
PLYMPTON
ATTLEBORO
RAYNHAM
RHODE ISLAND
TAUNTON
MIDDLEBOROUGH
CARVER
PLYMOUTH
SEEKONK
REHOBOTH
DIGHTON
BERKLEY
LAKEVILLE
FREETOWN
WAREHAM

study area

For the Boston SMA, the regions of greatest absolute growth lie in an inner suburban ring along the circumferential highway, Route 128; while areas of lesser absolute growth but greatest percentage increase tend to be located in an outer suburban ring. There is little doubt that this pattern, somewhat modified by the inclusion of the Brockton, Lawrence, and Lowell SMA's, also describes the larger GBESC area.

3,738,000 Persons by 1970

Table I presents the projections of the GBESC area's population to 1960 and 1970 and includes the 1950 Census figures for comparison. The total population projected for 1970 is 3,738,000, a gain of some 607,000, or 19.4 per cent, over the 1950 Census total. This represents a substantial expansion and implies fairly steady growth for the thirty years 1940 to 1970. The rate of increase indicated for the period 1950-1960 is somewhat higher than that for the preceding or succeeding decades.[3] In addition to this moderating trend, it is expected that Greater Boston's future growth rate will be slower than that for other parts of the country.

The present projection is based on these assumptions:

1. The area will continue to receive a very small net increment of migrants, comparable in size to that experienced between 1940 and 1950;

TABLE I

THE POPULATION OF GREATER BOSTON PROJECTED TO 1970

	Age Group	Male	Female	Total
1950				
	0-14	376,249	359,189	735,438
	15-44	663,535	708,549	1,372,084
	45-64	338,041	372,469	710,510
	Over 64	132,882	180,404	313,286
	All Ages	1,510,707	1,620,611	3,131,318
1960				
	0-14	482,000	462,000	944,000
	15-44	665,000	696,000	1,361,000
	45-64	349,000	403,000	752,000
	Over 64	162,000	224,000	386,000
	All Ages	1,658,000	1,785,000	3,443,000
1970				
	0-14	513,000	491,000	1,004,000
	15-44	738,000	763,000	1,501,000
	45-64	378,000	429,000	807,000
	Over 64	173,000	253,000	426,000
	All Ages	1,802,000	1,936,000	3,738,000

Sources: 1950 U. S. Population Census, Volume II, Characteristics of the Population.

Greater Boston Economic Study Committee.

2. fertility, as measured by the fertility ratio,[4] will continue throughout the period 1950-1970 at the levels of 1955; and

3. mortality will continue at the levels experienced by the white population of Massachusetts during 1949-1951.

The estimates for 1960 and 1970 population in Table I can be correctly interpreted only with regard for these assumptions.

Greater Boston, New England and the U.S. Compared

Table II compares the growth rate projected for the GBESC area with the rates projected by the Census Bureau for the United States, the Census divisions, and the New England states.[5] It is noteworthy that the rate for New England, 20.9 per cent, falls well below that for the United States as a whole, 35.2 per cent. Moreover, the New England rate is only slightly more rapid than that of the West North Central Division where all of the states -- Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas -- are experiencing a net out-migration. In projected future growth, New England surpasses only the East South Central Division substantially.

Within New England, the estimated growth rate for Massachusetts stands at 17.5 per cent. This is slightly below the six-state average. Connecticut and New Hampshire, with rates of 39.6 and 20.4, exceed

TABLE II

PROJECTED RATES OF POPULATION INCREASE, 1950 TO 1970: COMPARISON OF GBESC AND OTHER AREAS

U.S. and Divisions	Rate	New England Areas	Rate
United States	35.2%	GBESC Area	19.4%
New England	20.9	Maine	8.8
Middle Atlantic	27.6	New Hampshire	20.4
East North Central	41.1	Vermont	4.2
West North Central	18.1	MASSACHUSETTS	17.5
South Atlantic	38.7	Rhode Island	15.9
East South Central	7.9	Connecticut	39.6
West South Central	27.0		
Mountain	61.4		
Pacific	79.6		

Source: U.S. Census, Current Population Reports, Series P-25, No. 160 using projection Series 2 for all areas except Boston.

Massachusetts; Rhode Island falls slightly below, while the slow-growing states of Maine and Vermont are significantly exceeded by this state

Within Massachusetts, the GBESC area has a projected rate of population growth from 1950 to 1970 of 19.4 per cent--that is, a little above the average for the state. This difference flows largely from the fact that the study area is gaining very slightly from net-in-migration, while the state as a whole is losing some population through net-out-migration.

Seen in its national setting, it is evident that population growth in Greater Boston will be relatively slow, though somewhat faster than the average for the rest of Massachusetts. In contrast with the projected growth of such Census Divisions as the East North Central, the South Atlantic, the Mountain and the Pacific, Metropolitan Boston's growth to 1970 will be slow indeed.[6]

The slight differentials between Massachusetts and GBESC area projected growth shown in Table II results in a very small increase in the proportion of Massachusetts' population included in the GBESC area. In 1940 and again in 1950, 66.8 per cent of the state's population was in the GBESC area; as projected, comparable figures for 1960 and 1970 are 68.8 per cent and 67.8 per cent. On the basis of these data, it is reasonable to conclude that the GBESC area will maintain this proportion until 1970.[7]

Changing Age Composition of GBESC Area

Table III shows that the increases by decade, by age group, are uneven. For example, there is a projected gain, of 208,600 persons 0-14 years old for the period 1950 to 1960, but the comparable gain in the next decade is only 60 thousand.[8] In 1950, the 0-14 year-olds included persons born during ten years of late depression and war, and during only five years of post-war prosperity and "baby-boom". The

TABLE III

PROJECTED INCREASES IN THE POPULATION OF GREATER BOSTON BY AGE AND SEX GROUPINGS (in thousands)

Age	1950 - 1960			1960 - 1970		
Group	Male	Female	Total	Male	Female	Total
0-14	105.8	102.8	208.6	31.0	29.0	60.0
15-44	1 5	-12.5	-11.1	73.0	67.0	140.0
45-64	11.0	30.5	41.5	29.0	26.0	55.0
Over 64	29.0	43.6	72.7	11.0	29.0	40.0
All Ages	147.3	164.4	311.7	144.0	151.0	295.0

Source: Table I

large increment of 0-14 year olds shown for 1950-1960 reflects the aging of the large numbers born annually after 1945. This increase is particularly significant because it comes despite a slight decrease in the number of persons projected for the parental ages, 15-44. The 0-14 year old increment projected for 1960 to 1970, on the other hand, reflects solely an increase in the numbers in the parental ages, since continuance of current fertility rates is assumed.

The relative stability in numbers aged 15-44 projected from 1950-1960 is largely a function of the 1950 age structure of the population. In 1950, there were 438,860 people aged 5-14 and 441,204

aged 35-44 in the GBESC area population. Thus, in ten years' time, aging alone would add fewer people to the age grouping 15-44 than it removed. From 1960 to 1970, the situation is very different. The projection shows 624,651 people aged 5-14 in 1960 and only 476,216 aged 35-44; obviously aging alone is more than sufficient to account for the increase projected for the age grouping 15-44 from 1960-1970.[9] Projected rates of increase in the age group 45-64 are closely similar for the two decades, but for those 65 and over, considerably greater growth is projected for 1950-1960 than for 1960-1970.

From a broader perspective, Table IV permits a direct comparison of absolute and percentage changes in the major age groupings for the twenty-year period from 1950-1970. The total projected increase is 606,682 for the GBESC area, nearly half of which, 44.3 per cent, is in the 0-14 age grouping, with the remainder distributed among the other age categories. The table also shows that the age groups containing the old and the young may be expected to increase rapidly up to 1970, while the growth of the middle-aged groups, 15-44 and 45-64, will be much less.

It is evident from the above discussion that close analysis of the changing age composition of Metropolitan Boston's population will help in planning for services and facilities such as schools for the young

and appropriate facilities for the old. The expanding need for schools at higher and higher age-grade levels is well known, but the leveling off of demand for additional facilities which a slower expansion of the school-age population may be expected to bring in the 1960's is not so widely recognized. Similarly, the projection suggests that there may be a slight tapering off in the rate at which new facilities and services must be provided for those over 65 during the 1960's. Lastly, as the age grouping 15-64 years closely approximates the labor force, it is evident that the population in the dependent ages may be expected to increase very rapidly to 1970 while the numbers in the productive ages will show a much smaller gain.[10]

TABLE IV

THE PATTERN OF POPULATION GROWTH IN GREATER BOSTON BY AGE AND SEX GROUPINGS, 1950-1970

Age Group	Numbers	Percentage Distribution	Rates of Increase
0-14	268,562	44.3	36.5%
15-44	128,916	21.2	9.4
45-64	96,490	15.9	13.6
Over 64	112,714	18.6	36.0
All Ages	606,682	100.0	19.4

Source: Table I

Projected Sex Composition

The balance between males and females in the Greater Boston population is not expected to change significantly by 1970. The sex ratio, number of males per 100 females, for the GBESC area was 94.0 in 1940 and 93.2 in 1950. Projected to 1960, it is 92.9 and 93.1 for 1970. Thus the very slight increase in the proportion of women in the area from 1940 to 1960 will be offset by 1970, largely as a consequence of a simple aging process in the existing sex structure in the population. With a larger share of the population in the younger ages where the proportion of males is higher, the overall sex ratio is slightly increased. Detailed comparisons of sex ratios by age for 1950 and 1970 are shown in Table V. There is no significant change in relative numbers of males

TABLE V

SEX RATIOS* IN GREATER BOSTON
BY AGE GROUPINGS, 1950 AND 1970

Age Group	1950	1970
0-14	104.7	104.5
15-44	93.6	96.7
45-64	90.8	88.1
Over 64	73.7	68.4
All Ages	93.2	93.1

*The sex ratio is the number of males per 100 females.
Source: Table 1

aged 0-14 years, and only small reductions in the proportions of males are projected for the two older age groupings. The most interesting change is in the 15-44 age category where the proportions of males is expected to increase from 93.6 per 100 females in 1950 to 96.7 by 1970.

Interpretation of the Projections

The projections of the GBESC area population reported here are, of course, subject to errors as varied as the numerous assumptions which underlie them. Economic and political upheavals such as depression and war can alter drastically the trends on which the projections are based. There is, however, no reason to suppose that the assumptions used are inappropriate, although the Census Bureau is currently making national estimates based on a somewhat more bullish outlook. The projection presented here is conservative in that its assumptions fall midway between the extremes of optimism and pessimism about future growth. Roughly, the chance that the 3,738,000 projection will vary plus or minus 4 per cent is about one in four. This works out to a probable minimum population of 3,588,000 and a probable maximum of 3,888,000 for the GBESC area in 1970. The range of variation for sub-totals presented is, of course, larger.

A Note on the Projection Method

The component, or input-output method used by the Census Bureau, was adapted for the present GBESC area projection.[11] It has the advantage over the simpler projection of growth curves of providing a projection of the age-sex composition. This is important for many kinds of specialized planning.

As applied to the GBESC area, the component method started with the 1950 Census population classified by age and sex. Estimated births were added for the decade; estimated deaths were subtracted from appropriate age-sex groupings; migration increments and decrements were estimated for each age-sex grouping, and the results of aging were allowed for to produce an estimate of population in 1960 classified by age and sex. This 1960 projection, in turn, became the basis for a similar series of "inputs" and "outputs" to compute the 1970 projection. Thus, in principle, the method is simple.

In fact, the process is technically much more complex. The need to derive the components of change, and correct available data for known inaccuracies, made the actual computations rather complicated. The 1950 base population, by five-year age-sex groupings, was obtained directly from the U.S. Census, but was corrected for the underenumeration of children under five years.[12] The number of

persons who could be expected to live ten years to 1960 was estimated by applying appropriate survival rates to each age-sex grouping; thus, in effect, subtracting deaths.[13] Migration components for each age-sex grouping were estimated by comparing the estimated survivors from 1940 with the 1950 Census count ten years older, and adjusting the totals to check with an independent estimate of total migration for all ages derived from registered births and deaths.[14] Births between 1950 and 1960 were estimated by applying the 1955 ratio of children under five years to women 15-44, to the projected number of women 15-44 years in 1960, and by utilizing the 1955 Massachusetts Census count of children under five in that year. Adding (or subtracting) migration components to estimated numbers of survivors for each age-sex grouping completed the projection to 1960 for those ten years old and older. Adding estimated births, further adjusted for survival to 1960 and migration, filled in the projections for those under ten. The 1970 projection was similarly built up, component by component, age-sex grouping by age-sex grouping. The detailed data was then summed by broad age categories to yield the estimates shown in Table I.

Footnotes

[1] The GBESC area includes 149 cities and towns within a thirty-mile radius of downtown Boston. The analysis uses the same methods and techniques as were employed in an earlier projection for the Boston SMA. Apart from the magnitudes developed for the GBESC area, the conclusions of this paper differ little from those developed for the Boston SMA alone. For this reason this report follows, wherever appropriate, the form and language of the earlier work. See Sweetser, Frank L., "Greater Boston's 1970 Population: Part I, "Boston University Business Review, Volume 5, No. 1, Spring 1958.

[2] Sweetser, Frank L., 'Greater Boston's 1970 Population: Part II," Boston University Business Review, Volume 5, No. 2, Fall, 1958. With the 1960 data imminent and because the complexities of the population projection reduce the range of accuracy when it is attempted by town, it did not seem worthwhile to extend the method of town analysis to the remaining 84 cities and towns in the GBESC area.

[3] The Census showed a 1940 GBESC area population of 2,882,549 and an increase of 8.6 per cent to 1950. After correction for underenumeration of children under five years in the 1950 Census, the increase projected to 1960 was 9.4 per cent, and from 1960 to 1970, 8.6 per cent. It should be noted that the 1950 Census figures in Table I have not been corrected for underenumeration, nor has an allowance for underenumeration been made in any of the figures in the text.

[4] The fertility ratio is the ratio of children under five to women in the 15-44 age group.

[5] The Census Bureau assumptions for Series 2, which are closely analagous to those on which the GBESC projections rest, were used. Briefly, these were as follows: "...1940-1955 levels of migration remain constant throughout the projection period." "Fertility, 1950-1953 level... remains constant to 1970.) "The mortality rates were extrapolated on the basis of the experience of the 1940's...(and)...imply, in general, a continuation until 1960 of the decreases observed during the 1940's. For periods after 1960, the rates were assumed to remain constant at the 1955-1960 levels." Current Population Reports: Population Estimates, "Illustrative Projections of the Population by States, 1960, 1965, and 1970," Series P-25, No. 160, August, 1957, and Series P-25, No. 123, October, 1955.

[6] More recent projections for the New England States, prepared by the author for the Federal Reserve Bank of Boston, show slightly higher projected rates of increase, 1950-1970, as follows: Maine, 11.4 per cent; New Hampshire, 22.8 per cent; Vermont, 7.0 per cent; Massachusetts, 19.3 per cent; Rhode Island, 19.1 per cent; and Connecticut, 37.7 per cent. (Figures used by permission of the Federal Reserve Bank, through the courtesy of Dr. George H. Ellis.) The differences arise principally from somewhat more optimistic mortality assumptions, and from revisions of migration data. It should also be noted that the 1950-1970 increase projected for the United States in the Census Bureau's latest study, P-25, No. 187, November, 1958, Series 2, is 41.3 per cent, that is, appreciably higher than the figure in text Table II. It has seemed wisest, however, to limit discussion in the text to projections series with comparable assumptions, especially since there is no firm assurance that the more recent assumptions of the Census Bureau are to be preferred to its earlier assumptions.

[7] When the GBESC figures are compared to the Massachusetts figures in the Federal Reserve projection (Footnote 6), there is virtually no change from decade to decade. From 1940 to 1970 the percentages are: 66.8 per cent, 66.8 per cent, 66.9 per cent, and 66.8 per cent.

[8] This 1950-1960 figure is overstated by some 15,000 as a result of Census underenumeration, but this discrepancy is too small to affect the argument in the text.

[9] For both periods, migration and mortality play a minor part in producing the results shown in Table I. Aging is by far the most significant factor.

[10] The consequences of these demographic trends and projections for the labor force are analyzed in Dr. Everett J. Burtt's "The Labor Force of Greater Boston," Greater Boston Economic Study Committee, May, 1959.

[11] The procedures used in preparing the projection for the GBESC area were selected after consultation with Jacob S. Siegel, Chief, Estimates and Forecasts Section, Demographic Statistics Branch, Population and Housing Division, U.S. Bureau of the Census, and his associates, Messrs. Greenberg and Zitter. Their valuable suggestions and the assistance of Dr. Howard Brunsman, Director of the Population and Housing Division of the Census Bureau, are gratefully acknowledged. The writer is, however, solely responsible for the development of this projection, and no Census Bureau sanction of the results is implied.

[12] 1950 Census of Population, Volume II, Characteristics of the Population. The correction added several thousand to the published 1950 figures. The adjusted data was used only for computation purposes.

[13] Survival rates were based on the mortality experience of the white population of Massachusetts, as reported in "Massachusetts State Life Tables; 1949-1951," Vital Statistics - Special Reports, Volume 41, Supplement No. 20, National Office of Vital Statistics, Washington, March, 1956.

[14] Estimating net migration by age-sex groupings was the most complex phase of the projection procedure. Using 1940-1950 experience for the purpose, it was first necessary to prepare detailed 1940 and 1950 age-sex distributions for the GBESC area. This entailed assembling data from several Census tables and estimating five-year distributions for smaller towns not tabulated in detail by the Census. The 1940 Census was then corrected for the change in residential allocation of college students made by the Census Bureau in 1950 when college students were counted as residents of the town and city in which they lived while attending school. A correction for the incomplete registration of births was also necessary.

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The Greater Boston Economic Study Committee (GBESC) was organized in 1957. The Committee presently has seventeen members -- fourteen are businessmen, one is a newspaper editor, and two are the deans of schools of business administration. To help guide the work of the Committee, a Research Advisory Committee was appointed. This group consists of leading scholars and experts in metropolitan affairs. In 1959, the GBESC became Associates of the Committee for Economic Development (CED). The GBESC feels that this association has helped to broaden its own metropolitan program and organization.

The GBESC has two objectives. One is the gathering, organization and circulation of basic economic data which will advance an understanding of the forces and trends operating in the metropolitan area. The other is to formulate policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

This report is one of the background papers on metropolitan economic information which the Committee has commissioned. The author alone is responsible for its content and conclusions. The GBESC hopes that this and other economic base materials which it publishes will continue to serve the growing need for reliable information on the Boston metropolitan region.

economic base report 3

Recent Changes in the Employment Structure of Greater Boston

by Everett J. Burtt, Jr.

Professor of Economics

Boston University

November, 1959

greater boston economic study committee

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RECENT CHANGES IN THE EMPLOYMENT STRUCTURE OF GREATER BOSTON

In the seven years between 1950 and 1957, Greater Boston's share of all nonfarm jobs in the State of Massachusetts rose from 67.6 per cent to 69.0 per cent. Of the 1,775,700 such jobs estimated by the Bureau of Labor Statistics for the Commonwealth in 1950, the 149 cities and towns that comprise the GBESC study area had 1,201,100. By 1957, Greater Boston had 1,276,100 of the Massachusetts total, 1,850,500.

When the data for employment covered under the Massachusetts Employment Security Law (which account for over 80 per cent of all nonfarm jobs) are taken alone, Greater Boston's relative and absolute growth is even more striking.[1] In the seven-year period, the GBESC area gained 49,800 jobs, while the rest of the state lost 27,600. As a result, Greater Boston's share of employment in Massachusetts rose from 65.5 per cent in 1950 to 67.8 per cent in 1957.

A significant feature of this period was the exceptional rise in electronics employment. This growth more than offset the sharp

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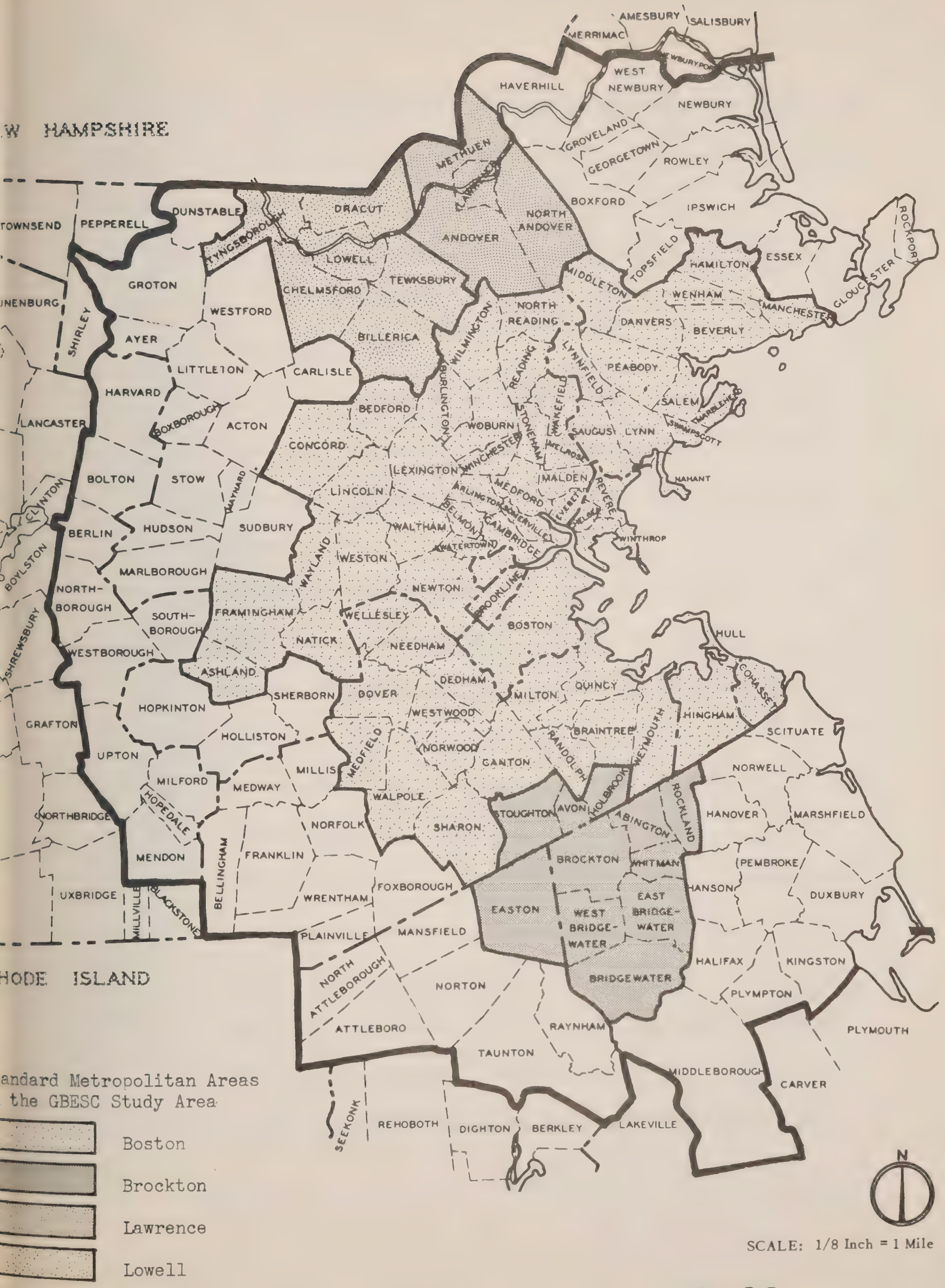
[1] Unless otherwise specified, the data used in this report refers to employment covered under the Massachusetts Employment Security Law. This data excludes all government, nonprofit, agricultural, domestic service and railroad employment.



GBESC study area

S. Bureau of Census, 1950

decline which occurred in textiles when many mills shut their doors and moved south. At the same time, the economic structure of the Greater Boston area has been changing in other important ways

1. The proportion of Greater Boston's labor force employed in trade and services is growing as the share in manufacturing declines
2. Manufacturing, which now accounts for about 40 per cent of all employment in the area, experienced a major shift from the production of nondurables to durable goods since 1950.
3. Though the Greater Boston area as a whole showed a 5.1 per cent rise in employment between 1950 and 1957, one of its Standard Metropolitan Areas -- Lawrence -- showed a decline. The other three SMA's -- Boston, Brockton, and Lowell -- and the remaining cities and towns experienced increases in employment
4. While some striking local differences persist, the Greater Boston area as a whole is becoming more uniform in its industrial structure. Those parts of Greater Boston with relatively small shares of their total employment in manufacturing have tended to increase that share. The areas in which manufacturing already accounts for a relatively

TABLE I

Employment in Massachusetts, the GBESC Study Area and Its Four Standard Metropolitan Areas, September, 1950 and 1957
(in thousands)

	1950	1957	Net Change	Percent Change
1. Massachusetts				
Total Nonagricultural (BLS)	1,775.7	1,850.5	74.8	4.2
Covered Employment*	1,491.7	1,513.9	22.2	1.5
2. GBESC Study Area				
Total Nonagricultural	1,201.1	1,276.1	75.0	6.2
Covered Employment*	976.7	1,206.5	49.8	5.1
Estimated Noncovered	224.3	249.6	25.3	11.3
3. Standard Metropolitan Areas in the GBESC Study Area				
Total Covered	976.7	1,026.5	49.8	5.1
Boston	769.7	808.9	48.2	6.3
Brockton	37.4	38.6	1.2	3.2
Lawrence	48.4	42.8	-5.6	-11.6
Lowell	35.1	37.1	2.0	5.7
Other cities and towns	95.1	99.1	4.0	4.2

* Covered employment refers to employment covered under the Massachusetts Employment Security Law. It excludes employment in Federal, State, and local Governments, agriculture, domestic service, railroads and some nonprofit institutions.

Sources: The Commonwealth of Massachusetts Division of Employment Security.

United States Department of Commerce, Bureau of Labor Statistics.

large proportion experienced their greatest employment gains in trade and services.

It is in the growth of new industry that Greater Boston has become the dynamic region of the Commonwealth. Led by electronics, these new industries have generated new sources of income and production. Management, technical and labor skills have expanded. This in turn has enlarged and altered the region's demand for labor and influenced the trend of population growth and migration.[2] Lastly, the findings of this research support the view that Greater Boston is no longer a loosely connected group of cities and towns but a single economic region.[3]

Manufacturing vs. Trade and Services in Greater Boston

Historically, the Greater Boston area has had a comparatively small share of its employment in manufacturing. Table II compares the industrial distribution of employment in the four SMA's in the GBESC study area and six major SMA's outside New England, using

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[2] See Economic Base Papers No. 1, Burtt, E. J., Jr., The Labor Force of Greater Boston; and No. 2, Sweetser, F. L., The Population of Greater Boston Projected to 1970, Greater Boston Economic Study Committee, June, 1959

[3] To be published in this connection is a land use map for the study area and a paper on GBESC area definition

TABLE II

The Per Cent Distribution of Employment by Industrial Classifications for SMA's in the GBESC Area and Selected SMA's Outside New England, April, 1950

Industrial Classification	SMA's in the GBESC Area					Six SMA's Outside New England					
	Boston	Brock.	Lawr.	Low'l	4 SMA's	Chicago	Cleve.	Detr.	N.Y.-N.J.	Pitts.	St. L.
Agriculture, forestry, etc.	0.9	2.5	1.1	1.6	1.0	0.9	0.7	0.8	0.6	1.5	2.0
Mining	(a)	(a)	(a)	0.8	0.1	0.1	0.1	0.1	0.1	3.8	0.4
Construction	5.8	6.2	3.8	4.6	5.7	4.6	5.1	4.8	5.2	5.4	5.2
Manufacturing	28.6	42.9	54.9	44.9	31.4	37.5	40.7	46.9	30.6	38.0	33.7
Transport. and utilities	8.5	6.7	3.8	7.2	8.1	10.2	8.5	6.6	9.2	9.4	10.1
Wholesale & retail trade	22.0	18.5	16.5	16.8	21.3	20.1	19.3	18.0	21.3	18.7	20.4
Finance, insurance, rl. estate	5.8	3.0	2.2	2.2	5.3	4.6	3.7	3.3	6.8	3.3	4.1
Business services	2.7	2.4	1.6	1.8	2.6	2.8	2.6	2.4	3.2	2.1	2.4
Personal services	6.0	3.9	4.0	3.5	5.7	5.4	5.2	4.8	6.7	4.7	6.0
Entertainment services	1.0	0.7	0.6	0.8	0.9	1.0	1.0	1.0	1.3	0.9	0.9
Professional services	11.5	7.5	7.3	10.1	11.0	7.7	8.2	6.9	9.0	8.0	7.9
Public Administration	6.0	4.3	3.3	4.6	5.7	3.9	3.9	3.3	4.4	3.2	5.0
Industry not reported	1.2	1.4	0.9	1.1	1.2	1.2	1.0	1.1	1.6	1.0	1.9
TOTAL EMPLOYED	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: United States Department of Commerce, Bureau of the Census, 1950.

(a) Figures not reported where less than 0.05 per cent.

U. S. Census Bureau data for 1950. A composite employment figure for the four local SMA's is also used because it is more representative of the employment structure of Greater Boston than the figure for any one Standard Metropolitan Area.[4]

In 1950, the four SMA's of Greater Boston together had 31.4 per cent of their total jobs in manufacturing. The Boston SMA alone had 28.6 per cent. Brockton, Lawrence, and Lowell had considerably larger shares of their total employment in manufacturing, but because they are small SMA's as compared to Boston, their effect on the composite figure was slight. The overall figure, 31.4 per cent, thus stands well below the proportions for manufacturing employment shown in Table II for Chicago, Cleveland, Detroit, and Pittsburgh. These ranged from 37.5 per cent to 46.9 per cent. St. Louis also had a higher share of its employment in manufacturing than did Greater Boston, but the margin of difference was smaller. Only the New York-New Jersey SMA, with

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[4] This composite figure was calculated to overcome the difficulty that Standard Metropolitan Areas in New England are drawn by reference to town lines, whereas county lines are used elsewhere in the nation. A composite for the entire study area would have been even better. But census data is not available for the cities and towns lying outside SMA's. The four SMA composite is, however, adequate as it includes 90 per cent of all employment in the study area. It was calculated by summing the data for the four SMA's and then computing shares for each class of activity and not by averaging the per cent shares shown in Table II for each class of activity.

TABLE III

Greater Boston's SMA's and Six Other SMA's Outside New England in Rank Order of Goods Producing and Service Producing Employment, April, 1950

Standard Metropolitan Area	Percent Employment in Goods-Production	Percent Employment in Service-Production
BOSTON	35.3	64.7
New York	36.5	63.5
4 GBESC SMA's	38.2	61.8
St. Louis	41.3	58.7
Chicago	43.1	56.9
Cleveland	46.6	53.4
Pittsburgh	48.7	51.3
BROCKTON	51.6	48.4
LOWELL	51.9	48.1
Detroit	52.6	47.4
LAWRENCE	59.8	40.2

Source: Table II

30.6 per cent of its employment in factory jobs, ranked below the study area.

Another way of indicating this structural difference between the Greater Boston area and other major metropolitan centers is to compare the percentages of workers in the goods-producing industry with the percentages in service-producing occupations. The goods-producing group includes agriculture, forestry, fishing, mining, construction, and manufacturing. All other industries are classified as service-producing. Of the ten SMA's compared in this way in Table III, Boston stands out as having had the lowest percentage of jobs in goods-production, 35.3 per cent in 1950. New York with 36.5 per cent was a close second. Greater Boston's four SMA's, as a group, ranked third with only 38.2 per cent of all employment in goods-production. Next were the non-New England SMA's of St. Louis, Chicago, Cleveland, and Pittsburgh, ranging between 41.3 and 48.7 per cent. The Detroit SMA, with 52.6 per cent, was similar to Brockton, Lowell, and Lawrence SMA's in that all of them had concentrations of more than 50 per cent in the goods-producing industries.

The Geography of Industrial Structure

The Boston SMA dominates the industrial structure of the GBESC area. In 1950, 760,700 of the 976,700 persons employed in Greater Boston found their jobs in the Boston SMA. In the seven years that

TABLE IV

Per Cent Covered Employment in the GBESC Area SMA's and Other Cities and Towns, September, 1950 and 1957

1950	Boston	Brockton	Lawrence	Lowell	Other	All Areas
Agriculture, forestry, fishing and mining	63.5	1.6	(a)	1.6	33.3	100.0
Construction	85.2	3.0	2.8	2.1	6.9	100.0
Manufacturing	67.0	4.8	8.1	5.2	14.9	100.0
Transportation and public utilities	87.0	4.5	1.5	2.2	4.8	100.0
Trade, wholesale and retail	85.5	3.3	2.9	2.7	5.6	100.0
Finance, insurance and real estate	93.2	1.4	1.3	1.4	2.7	100.0
Service	85.8	2.3	3.0	2.1	6.8	100.0
Professional, non-profit, etc.	85.3	3.8	3.3	2.4	5.2	100.0
TOTAL	77.9	3.8	5.0	3.6	9.7	100.0
1957						
Agriculture, forestry fishing and mining	64.4	1.4	1.4	1.4	31.4	100.0
Construction	84.2	3.5	2.6	2.4	7.3	100.0
Manufacturing	69.1	4.5	6.2	5.5	14.7	100.0
Transportation and public utilities	87.3	4.9	1.6	2.1	4.1	100.0
Trade, wholesale and retail	84.7	3.6	2.8	2.6	6.3	100.0
Finance, insurance, real estate	92.5	1.5	1.8	1.4	3.0	100.0
Service	84.5	2.1	4.7	2.1	6.6	100.0
Professional, nonprofit etc.	85.9	3.4	3.1	1.8	5.8	100.0
TOTAL	78.7	3.8	4.2	3.6	9.7	100.0

(a) Percents not computed where less than 50 workers are represented.

Source: The Commonwealth of Massachusetts Division of Employment Security.

followed, employment in the Boston SMA increased 6.3 per cent, while the GBESC area as a whole gained only 5.1 per cent. As a result, the Boston SMA's share of the Greater Boston total rose from 77.9 per cent to 78.7 per cent. Brockton and Lowell maintained their shares at 3.8 and 3.6 per cent, respectively. The other cities and towns of the study area also held their own at 9.7 per cent of all employment but the Lawrence SMA declined as it lost 5,600 jobs, due mainly to the decline of its textile industry. For Lawrence, this represented a 11.6 per cent fall from its 1950 level with the result that its share of all covered jobs in the GBESC area declined from 5.0 per cent to 4.2 per cent in 1957.

The four SMA's of Greater Boston exhibit considerable variation in their industrial makeup. In 1957, the Boston SMA contained 92.5 per cent of the region's jobs in finance, insurance, and real estate, although it had only 78.7 per cent of all jobs. The Boston SMA also exceeded its average share in construction, transportation, trade, services, and professional activity by tallying 85 per cent in 1957 of all such employment. Conversely, only 69.1 per cent of the GBESC area's manufacturing, and an even lesser proportion of agriculture, forestry, fishing, and mining, was located in the Boston SMA.

During the period under review, there was a trend toward increased similarity of industrial structure among the parts of the Greater

TABLE V

Covered Employment in the GBESC Area by Selected Major Classes of Industry, Septembers, 1950 and 1957 (in thousands)

	1950	1957	Net Change
Construction	56.8	57.6	.8
Boston SMA	48.4	48.5	.1
Brockton SMA	1.7	2.0	.3
Lawrence SMA	1.6	1.5	-.1
Lowell SMA	1.2	1.4	.2
Other cities and towns	3.9	4.2	.3
Manufacturing	426.2	428.4	2.2
Boston SMA	285.6	296.3	10.7
Brockton SMA	20.6	19.1	- 1.5
Lawrence SMA	34.5	26.5	- 8.0
Lowell SMA	22.1	23.6	1.5
Other cities and towns	63.4	62.9	-0.5
Transportation & public utilities	67.0	73.1	6.1
Boston SMA	58.3	63.9	5.6
Brockton SMA	3.0	3.6	.6
Lawrence SMA	1.0	1.3	.3
Lowell SMA	1.5	1.5	0.0
Other cities and towns	3.2	3.0	-.2
Trade	269.5	281.9	12.4
Boston SMA	230.3	238.6	8.3
Brockton SMA	8.8	10.1	1.3
Lawrence SMA	7.8	7.9	.1
Lowell SMA	7.4	7.4	0.0
Other cities and towns	15.2	17.9	2.7
Finance	63.2	73.7	10.5
Boston SMA	58.9	68.1	9.2
Brockton SMA	0.9	1.1	.2
Lawrence SMA	0.8	1.3	.5
Lowell SMA	0.9	1.0	.1
Other cities and towns	1.7	2.2	.5
Services	66.6	72.2	5.6
Boston SMA	57.2	61.0	3.8
Brockton SMA	1.5	1.5	0.0
Lawrence SMA	2.0	3.4	1.4
Lowell SMA	1.4	1.5	.1
Other cities and towns	4.5	4.8	.3
Professional, nonprofit & other	21.1	32.7	11.6
Boston SMA	18.0	28.1	10.1
Brockton SMA	0.8	1.1	.3
Lawrence SMA	0.7	1.0	.3
Lowell SMA	0.5	0.6	.1
Other cities and towns	1.1	1.9	.8

Boston area. Almost without exception, the share for each major industry group in each SMA was closer in 1957 to that SMA's share of all activity than it was in 1950. To illustrate: in the Boston SMA the rapid rise of manufacturing along Route 128, which more than offset the decline in factory jobs at the core, had the effect of increasing the share of all employment devoted to manufacturing between 1950 and 1957. Although this share was still disproportionately low in 1957 -- only 69.1 per cent -- this figure was 1.3 percentage points nearer the Boston SMA's share of all employment than it had been in 1950. On the other hand, the Boston SMA's share of service-producing jobs fell off slightly during the seven-year period, again bringing it nearer in 1957 than it was in 1950 to its share of all employment.

In the three smaller SMA's, the patterns of change were reversed. In Brockton, Lawrence and Lowell manufacturing employment in 1950 was relatively high, and service employment was relatively low. By 1957, manufacturing had shown small percentage losses in these SMA's while employment in services improved its relative position. These gains reflected mainly the increases in trade, services, and office activity.

Although the changes were relatively small and the period reviewed relatively short, the trend of increasing similarity of industrial structure among SMA's was a steady one. It is this stability of the trend that is important. Along with other research which indicates increased labor

TABLE VI

Per Cent Employment in Durable and Nondurable Goods Manufacturing in the GBESC Area Septembers, 1950 and 1957

	1950		1957	
	Durables	Nondurables	Durables	Nondurables
GBESC Area	39.5	60.5	50.4	49.6
Boston	44.2	55.8	52.6	47.4
Brockton	19.3	80.7	23.4	76.6
Lawrence	11.3	88.7	49.3	50.7
Lowell	8.5	91.5	30.4	69.6
Other Cities and Towns	51.1	48.9	56.6	43.4

Source: The Commonwealth of Massachusetts Division of Employment Security.

mobility in the GBESC area, this finding of a greater similarity of industrial structure among the SMA's also suggests a stronger economic integration for the study area as a whole.[5]

Manufacturing: Changes in Location and Structure

Among the changes that took place in manufacturing employment in the seven year period, two stand out. First, the area as a whole gained only 2,200 manufacturing jobs, and second, in each of the SMA's and in the residual cities and towns as a group, there was a shift from the production of nondurable to durable goods.

Table V shows the magnitude and location of the gains and losses. Only the Boston SMA had a significant increase, 10,700 jobs. Lawrence suffered a major loss of manufacturing employment, 8,000 jobs, while all other areas remained essentially unchanged.

As shown in Table VI, the ratio of durable-goods employment to the total number of factory jobs rose sharply in each of the SMA's, the residual areas, and therefore in Greater Boston as a whole from roughly 40 per cent in 1950 to 50 per cent in 1957. This shift is explained by Table VII, which presents changes in the rank order of Greater Boston's ten leading categories of manufacturing. The decline of textiles from second to eighth place and the rise of electrical machinery -- the industry group that contains most of the electronics industry -- to the top are the

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[5] E. J. Burtt, Jr., Labor Supply Characteristics of Route 128 Firms, Federal Reserve Bank of Boston, March, 1958, and a GBESC study of trends in industrial location in the study area, to be published.

Changes in the Rank Order of Covered Employment in Manufacturing Industries in the GBESC Area Between September 1950 and September 1957
(in thousands)

Classification	Employment 1950	Employment 1957	Rank Order 1950	Rank Order 1957
Leather and leather products	59.4	50.5	1	2
Textile mills products	57.6	23.1	2	8
Electrical machinery, equipment and supplies	36.3	78.0	3	1
Food and kindred products	35.2	32.7	4	5
Apparel and other finished fabrid products	34.1	33.8	5	3
Machinery, excluding electrical	31.1	33.1	6	4
Printing, publishing, and allied industries	25.9	26.5	7	7
Miscellaneous manufacturing	24.1	27.0	8	6
Transportation equipment	21.5	20.5	9	10
Fabricated metal products, excluding ordinance, machinery, and transportation equipment.	20.3	20.7	10	9
Total	345.5	345.9		
Total as a per cent of all manufacturing employment	81.1	80.7		

Source: The Commonwealth of Massachusetts Division of Employment Security.

outstanding changes of the period.

Though the GBESC area barely achieved an even balance of jobs between durables and nondurables, the Boston SMA moved to preponderance in durables. The prime cause was the spectacular rise of electronics along Route 128.

Nondurables still dominate manufacturing in the Brockton and Lowell SMA's, but their preponderance has been substantially reduced. Despite mill closings since World War II, textile employment still ranked first in Lowell. Electronics, however, has gained in Lowell, and this gain, along with the textile decline, has combined to enlarge the share of employment devoted to durable-goods production. In the Brockton SMA, leather and leather products still dominates manufacturing employment.

In Lawrence, the precipitous fall of textile employment and the rise of the electrical industries shifted the balance from about a 90:10 ratio favoring nondurables in 1950 to a 50:50 ratio in 1957. Beyond the boundaries of the four SMA's, manufacturing employment takes place in small diversified establishments. In 1957, firms producing durables accounted for 56.6 per cent of all jobs in this residual area.

Growth Leaders of Greater Boston: Trade, Services, Finance

The most significant employment expansions in the study area came in trade, finance, and professional and nonprofit services. During

the seven-year period, these categories added 34,500 jobs, or two thirds of all growth in Greater Boston. In almost every region of the study area, these activities increased their shares of all employment at the expense of manufacturing. This trend, shown in Table VIII, is consistent with the national pattern of growth, and is generally held to be a characteristic of an advanced and expanding economy.

The largest absolute growth, 12,400 jobs, was in wholesale and retail trade. At 4.5 per cent, the rate of expansion was moderate when compared to the 5.1 per cent for all employment. Furthermore, some of the SMA's experienced almost no absolute increase in trade employment whatsoever. Nevertheless, in every SMA there was a shift in the relative importance of wholesale and retailing employment. In the Boston SMA, it declined. In the rest of the study area, employment in trade constituted a larger share of employment in 1957 than it did in 1950.

By far the most striking gain in the study area, 55 per cent, occurred in professional and nonprofit service employment. During the period, 11,600 jobs were added to engineering, architectural, business and nonprofit activity. It has been estimates that if noncovered employment, such as that in hospitals and similar nonprofit institutions, were included, the gain in service employment would be twice as great.[6]

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[6] Based on unpublished Bureau of Labor Statistics data.

Over 10,000 of the 11,600 jobs gained were added in the Boston SMA; of these, some 5,000 were located within the limits of the city of Boston.

Finance, which increased by 10,500 workers, was the third major activity to show a substantial absolute increase in employment in the study region. Its growth rate was 16.6 per cent. As with the other gainers, the greatest growth occurred in the Boston SMA. Like services, but unlike trade, the absolute growth of financial employment in the city of Boston dominated the Boston SMA pattern.

Changes in Other Categories

The growth rates of 9.1 per cent for "transportation and utilities" and 8.4 per cent for "services" seem high when compared with the overall growth rates. In absolute terms, however, these activities added only 6,100 and 5,600 jobs respectively. In transportation and utilities, 90 per cent of the gain was confined to the Boston SMA; but in services, the gains were more widely shared. The Boston SMA gained 70 per cent of the increment in service jobs, Lawrence, 25 per cent, and the rest took place in the Lowell SMA and the municipalities beyond the SMA's. The changes in "construction" and in "agriculture, forestry, fishing, and mining" were too small to warrant separate consideration.

Some Implications of the Recent Employment Trends

The introduction to this report noted that employment trends contain hopeful implications for the future of Greater Boston. First among them is due to the decline in the relative importance of manufacturing and the rise in trade and services. Trade and services tend to be generally more stable and less affected by cyclical variations in their employment than are manufacturing and construction. Furthermore, trade and service industries are "residentiary", that is, they are less likely than manufacturing to seek new locations because of cost differentials alone. Non-manufacturing activities, such as insurance and scientific research, which locate in any large metropolitan center, benefit in Greater Boston from the economies of agglomeration. Hence their continuity and expansion in this area seem reasonably assured.

A second advantage implied by the shift, within manufacturing to durable goods production, is an increase in value added per worker. Because labor's contribution to the value of output is higher, correspondingly higher wage rates are usually paid in the durable goods industries. This effect may be somewhat less in Greater Boston because of the large number of female workers in electronics. Nevertheless, the hourly pay rate of all workers in the electrical machinery industries (which include the electronics employees) was recently estimated to be 22.5 per cent higher

than in textiles, and 13.3 per cent higher than in leather manufacturing.[7]

Beyond this, the production of durables such as electronic components and other scientific instruments has increased the number of professionally trained, nonproduction employees in the Greater Boston area. These workers, many of whom are scientists and engineers, command relatively high salaries.

Still another advantageous consequence of the employment trends in Greater Boston is that the local growth industries include those which are expanding most dynamically in the nation. The production of these industries is directly related to the expanding demands for automatic and semi-automatic equipment in private industry and in the national defense programs. By contrast, national employment levels in textiles have been shrinking and employment in shoes and other leather products has, at best, been stabilized since the second World War.

Finally, the growing durable goods industries of Greater Boston as distince from durable goods industries elsewhere in the nation, seem to have had greater resistance to cyclical fluctuations. During the 1957-1958 recession, the greatest declines in the urban centers of Massachusetts

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[7] Based on a sample of Massachusetts production workers. See release of May 26, 1958, of Boston Regional Office of the U. S. Bureau of Labor Statistics.

occurred in the hard-goods producing areas -- the Worcester and Springfield SMA's -- while the smallest decline was in the Boston SMA. Differentials in any cyclical swing will reflect in part, the specific pressures of any given recession, but it appears that electronics in general tends to be insulated in this respect. In recent years, Government contracts seem to have been stabilizing influences in the development of these industries.

Economic expansion in the Greater Boston area is not free from potential difficulties. One stems from this dependence of our industry on U. S. Government contracts. The ways in which this Government demand may vary are still largely unpredictable, and the future may find Governmental demands more irregular than demand based on consumer and business outlays. In the foreseeable period, however, the well-being of electronics seems assured and the present success of Greater Boston's electronics complex gives every reason to believe that the area will compete successfully in the future, for both public and private contracts.

Another potential problem results from the fact that Greater Boston growth industries are not endowed with specific natural advantages, vis-a-vis the other competing centers. In electronics, for example, New York City and the West Coast draw upon their educational and research institutions, just as the Greater Boston firms do. At the same time, we must not discount at least two significant area advantages of a specific kind. First, this area has already made substantial headway in the development of

research-based industrial agglomerations. Second, in the Greater Boston area, the educational and research organizations with their engineering, scientific, and professional resources have already given leadership in industrial development. Their enormous potentials for further research and development if properly used, should enable Greater Boston to maintain its outstanding position.

APPENDIX

A Note on Statistical Sources and Problems

In general, there are three sources of nonagricultural employment data. The first, the United States Bureau of the Census, collects information from households every ten years. The other two, the United States Bureau of Labor Statistics (BLS) and the Massachusetts Division of Employment Security (DES), collect information directly from employers. These data are available monthly, and throughout this report, data for the month of September was used. The BLS uses a sampling technique to estimate employment in all activities except agriculture and domestic service. The DES counts the actual number of jobs, but gathers information from only those employers whose activity is covered under Massachusetts Unemployment Compensation Law. As a result, these data exclude employment in all governments--federal, state and local--agriculture, domestic service, railroads, and some nonprofit institutions.

None of the above-described sources publishes employment for the Greater Boston area as defined by the GBESC. Data are, however,

available for the Census Bureau's four Standard Metropolitan Areas, Boston, Brockton, Lawrence, and Lowell, which lie within the study area. The Massachusetts DES provided the additional data for the residual cities and towns, and this made it possible to analyze employment in the GBESC area as a whole.

Two problems arise in the use of DES statistics. As already noted, DES cata excludes employment in several important classes of activity. For this paper, BLS data were used to make the estimates of the nonagricultural noncovered employment in Greater Boston. The estimating procedure was complicated by the fact that the BLS had not begun its Boston SMA series by September of 1950.

To make these estimates, the GBESC area was thought of as the Boston SMA plus the "rest of the GBESC area." Nonagricultural, noncovered employment for the Boston SMA was calculated as total nonagricultural employment (BLS) minus covered employment (DES). This was done for the three years of 1954, 1956, and 1957.

To make the estimates for the "rest of the GBESC area", it was necessary to calculate, for the three years, the ratio of noncovered to covered employment for the state, outside the Boston SMA. These ratios were then applied to covered employment in the "rest of the GBESC area," to yield estimates of noncovered employment. The estimates for the Boston SMA and the "rest of the GBESC area" were then summed for each year

to get Greater Boston totals.

The estimate of noncovered workers for Greater Boston in 1950 was then calculated in two steps. First, the Greater Boston ratio of noncovered to covered employment was determined for 1954, 1956, and 1957. These ratios were then averaged; and this average was applied to covered employment in Greater Boston in 1950.

The second problem relates to the industrial classification. The DES classification was followed in almost all instances, but adjustments had to be made when an employment trend was altered sharply by a DES reclassification. To avoid the impression of considerable growth in a particular industry, and lesser growth or decline in another, the procedure was to revert to the previous industrial classification. This procedure worked to make DES data more comparable with BLS estimates, since the BLS procedures also tend to minimize the effect of reclassifications on employment trends.

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GREATER BOSTON ECONOMIC STUDY COMMITTEE

The Greater Boston Economic Study Committee (GBESC) was organized in 1957. The Committee presently has eighteen members--fifteen are businessmen, one is a newspaper editor, and two are the deans of schools of business administration. To help guide the work of the Committee, a Research Advisory Committee was appointed. This group consists of leading scholars and experts in metropolitan affairs. In 1959, the GBESC became Associates of the Committee for Economic Development (CED). The GBESC feels that this association has helped to broaden its own metropolitan program and organization.

The GBESC has two objectives. One is the gathering, organization, and circulation of basic economic data which will advance an understanding of the forces and trends operating in the metropolitan area. The other is to formulate policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

This report is one of the background papers on metropolitan economic information. It was prepared under the supervision of Mr. John L. Culp of the GBESC research staff. The GBESC hopes that this and other economic base materials which it publishes will continue to serve the growing need for reliable information on the Boston metropolitan region.

economic base report 4

the population of the cities and towns of greater boston projected to 1970

December, 1959

greater boston economic study committee

SSOCIATES OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT 200 BERKELEY STREET, BOSTON 17, MASSACHUSETTS, LIBERTY 2-2146

ACKNOWLEDGEMENTS

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The cover, graphic materials, and report were designed by Muriel R. Cooper. Mr. Eugene Calabro performed the extensive statistical computations required for the preparation of this report.

Introduction and Summary

The population of Greater Boston will increase to 3,738,000 persons by 1970.[1] This estimate represents an increase of 607,000 persons over 1950, and was obtained by applying the cohort-survival method to United States Census Bureau data for that year. The cohort-survival technique did not yield estimates on a town-by-town basis. The purpose of this report is to present these estimates by allocating the overall figure to the 149 towns in the GBESC area. As presented here, these city and town projections show that:

1. The population of the core cities, Boston and 11 others, will decline slightly.
2. A band of forty cities and towns ringing the core but within fifteen miles of the State House will absorb almost 60 per cent of the increase.
3. Growth will continue mainly along the radial transportation routes that fan out from the core area with the greatest increases taking place in wedge-shaped sectors to the west, northwest and southeast.

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[1] Sweetser, F. L., The Population of Greater Boston Projected to 1970, Economic Base Report No. 2, Greater Boston Economic Study Committee, June, 1959.

These population increases will consume 95 square miles for urban residential neighborhood purposes. As the GBESC area contains at least 1,500 square miles of vacant or rural land, this obviously does not present a problem of land shortages as such. But the way in which this added population is distributed on the land is important because it affects a wide range of public and private decisions. These decisions, though interrelated, are made independently of each other, and, in the aggregate, they set the basic pattern of land use and economic development. In this connection, the finding that the area between the radial highways, notably along Route 128, is being peopled at an accelerated rate is especially important. At the present time, the amount of land developable for residential purposes in most of these towns is nearly exhausted. Unless higher population densities are permitted, this land will be almost fully occupied by 1970, and after that date, additions to the population will occur in the cities and towns further out. Obviously then, if the community is to assure for itself growth free from the distorting effects of population pressure, it will be necessary to define specific community objectives and to set appropriate standards. These must relate to:

1. Transportation planning and priorities for the construction of new highways and rapid transit extensions;

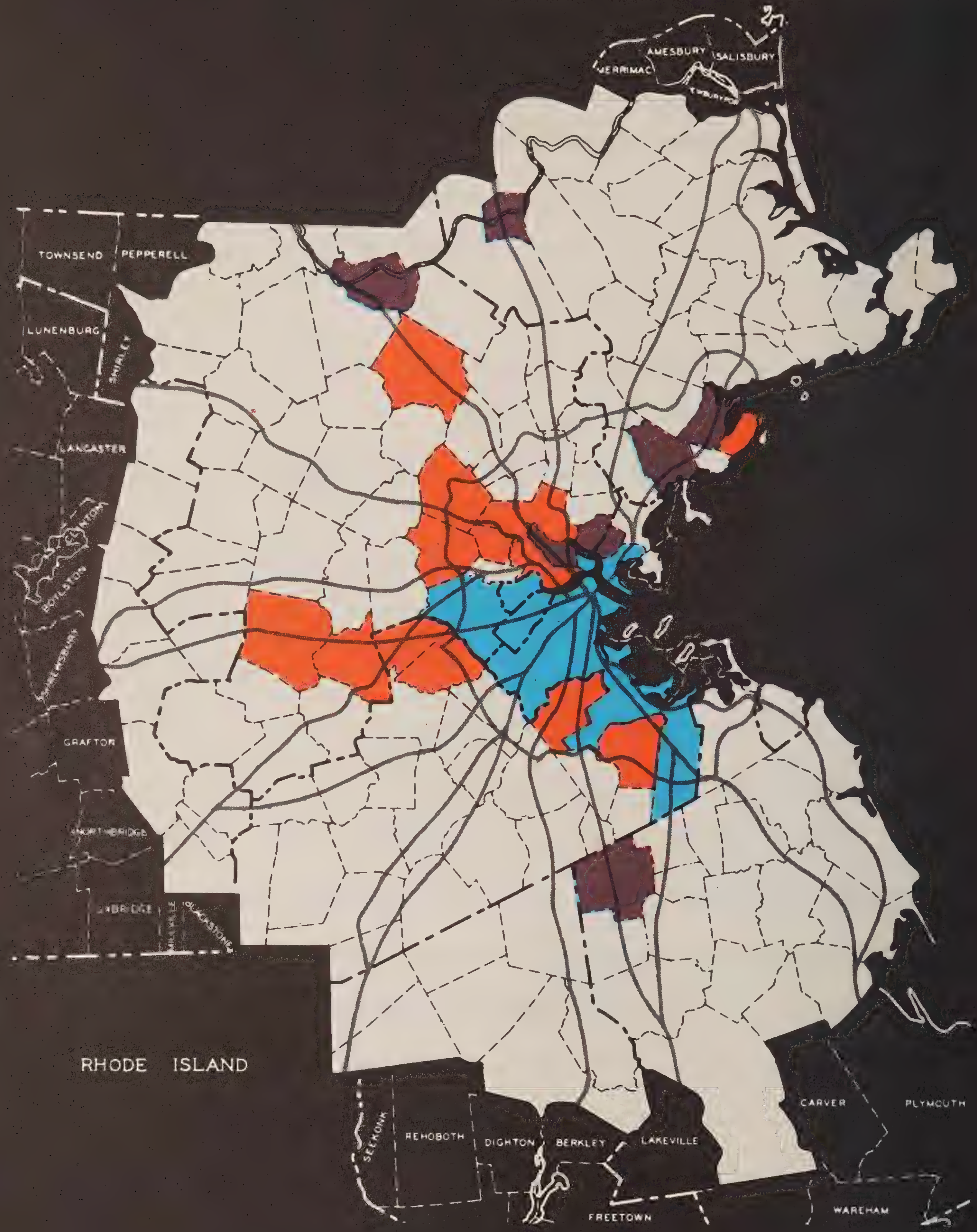
2. The timing, coordination, and location of major capital outlays for sewer and water facilities;
3. The location and land requirements for recreation and other open space uses;
4. The location and land requirements for industrial and commercial activities; and
5. Density standards and the location of residential populations.

The projected trends, their implications for transportation and land utilization, and the statistical methods employed are described in detail below. A table showing city and town populations for 1950, 1959, and projected 1970 is appended.

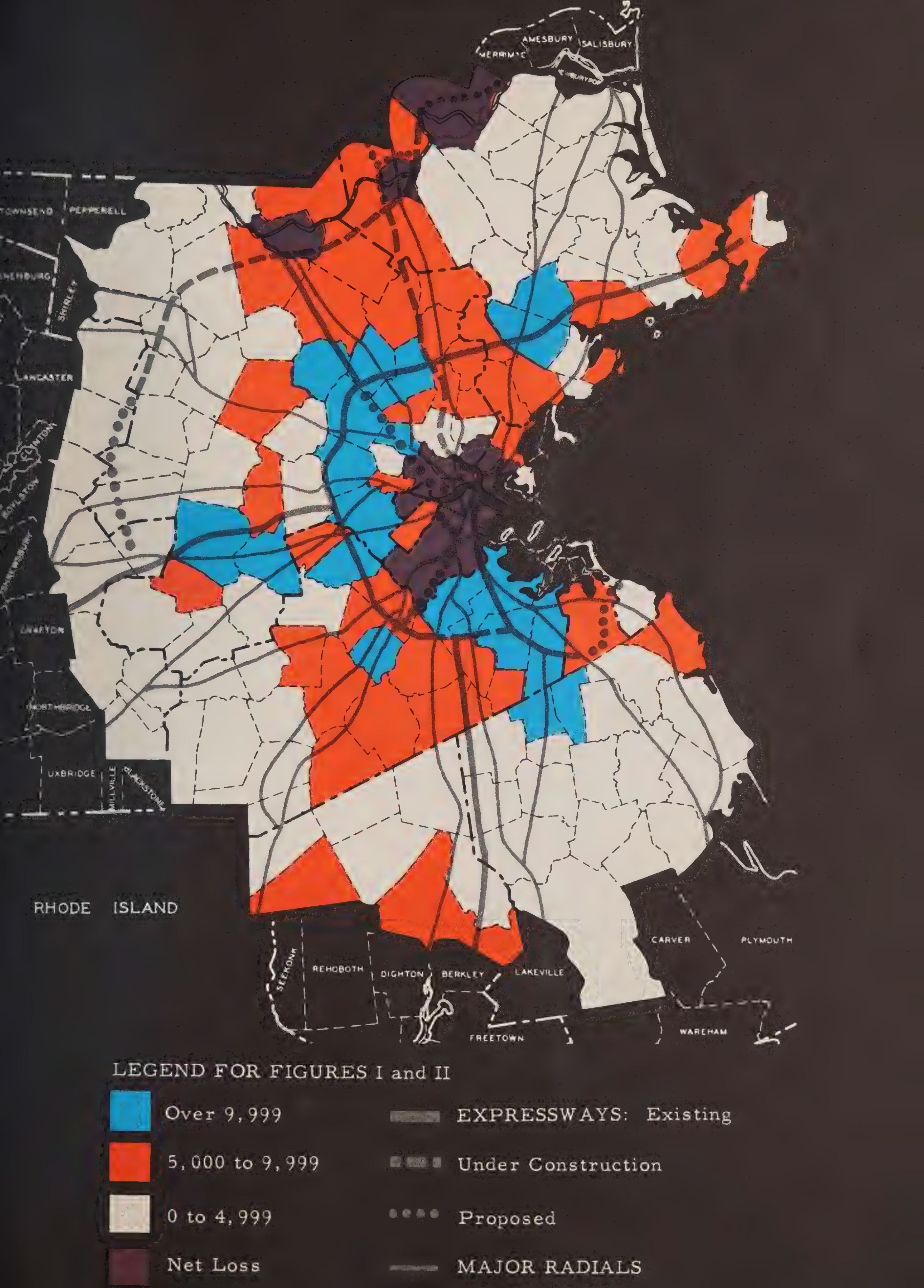
The General Pattern of Population Growth

The growth pattern and present distribution of Greater Boston's population is explained by the transportation network. Historically, the large concentrations of people have developed along the superior rail and highway connectors between the city of Boston and other important regional and national centers. These transportation facilities provide the best access to the central city, and correspondingly, they have had the greatest location advantages for both residential and industrual purposes. Road and rail facilities to points of lesser importance, such as Cape Cod, Fall River, and northern New England, have generally been

Absolute Population Change 1930-1950 FIGU



Absolute Population Change 1950-1970 FIGURE II



somewhat inferior. As a result, smaller concentrations of people and industry have developed along them.

Figures I and II show the population changes by city and town for the period 1930-1950, and 1950-1970, respectively. The difference between them is essentially one of degree. In the earlier period, the major radial expansions of population began to develop to the west, northwest and southeast. The process of filling in between the radials, however, was confined to Boston and a small area immediately adjacent to it. The outward radial movements have continued since 1950, and they will persist to 1970. The filling in between the radials will be accelerated and will extend to a distance of about 15 miles from downtown Boston, as the process follows a path coinciding with the circumferential highway, Route 128. The proposed outer circumferential, Route 495, is still in the first stages of planning and construction, and it will not be completed in time to affect the pattern of population growth to 1970.

The Population of the Core

The population of the core cities--Boston and 11 others as shown in Figure III--will fall to 1,385,600 by 1970. This loss, 45,300 persons, represents a 3.2 per cent decline from 1950. Not all of the 12 cities and towns in the core are expected to lose population, but the losses estimated for five of them, Boston, Cambridge, Somerville, Everett, and Chelsea, will more than offset any increases which may occur in the remaining seven.

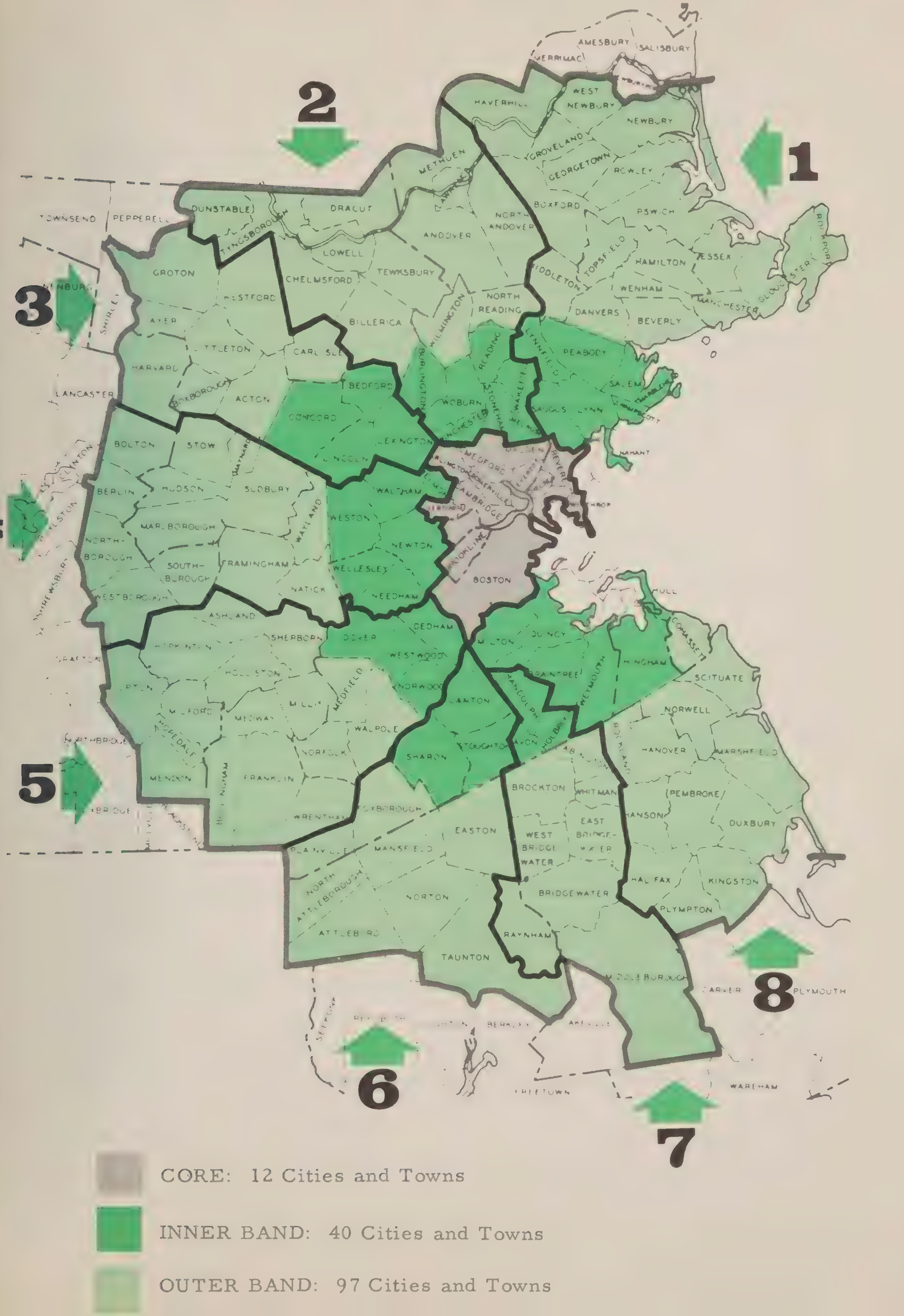
TABLE I

POPULATION GROWTH IN GREATER BOSTON BY SECTOR, 1950 AND 1970

Sector	Definition of the Area	U.S. Census Population 1950	Population Projected 1970	Net Change	Percent Change
The Core	12 central cities	1,430,900	1,385,600	-45,300	-3.2
Sector 1	along the North Shore	366,000	447,100	81,100	22.2
Sector 2	between Routes 28 & 3	386,800	502,600	115,800	29.9
Sector 3	along Route 2	57,500	108,500	51,000	88.7
Sector 4	between Routes 20 & 9	301,600	440,500	138,900	46.1
Sector 5	between Routes 16 and 109	117,800	186,900	69,100	58.7
Sector 6	along Route 1 south	126,300	178,700	52,400	41.5
Sector 7	between Routes 18 and 28 south	125,800	166,100	40,300	32.0
Sector 8	along the South Shore	218,300	324,300	106,000	48.6
GBESC Area	149 cities and towns	3,131,300	3,738,000	606,700	19.4

Note: The columns do not sum to the totals shown due to rounding errors.

GBESC STUDY AREA: Its Core, Sectors and Growth Bands FIGURE III



There is no evidence to support the hope that this declining trend at the center will be reversed. However, the rate of decline projected for the period 1950-1970 is slower than that for the preceding period, and this suggests that the population of the core may stabilize at about the level projected for 1970. But despite its relative decline, the core will remain the area of greatest population density and absolute concentration because growth elsewhere in the area will tend to be widely dispersed.

Population Growth Beyond the Core City

One important result of the town-by-town projections is that in the area beyond the core, the towns group themselves into fairly well defined growth sectors. These, shown in Figure III are numbered 1 through 8 as they fan down from the North Shore around the core and on through to the South Shore. The projected growth by sector is shown in Table I.

The greatest absolute growth, almost 140,000 persons in the two decades under review, will occur in Sector 4. This radial extends directly west and is dominated by Routes 20 and 9. Sector 2 to the northwest and Sector 8 along the South Shore will also experience increases of over 100,000 persons each. As a group, these three sectors will account for 60 per cent of all of the growth in the Greater Boston area between 1950 and 1970.

Sectors 1 and 3 represent the extremes of contrast in projected population growth. The former, running along the North Shore was the second largest of the 8 in 1950. It will experience the slowest growth rate, 22.2 per cent. Sector 3, the smallest of the 8 in 1950, will increase its population by 88.7 per cent by 1970. This, the greatest rate of growth projected for any of the 8 sectors, is due to three influences: 1) the improvements to Route 2 which have increased the area's time-distance proximity to downtown Boston; 2) the developing image of the region as a prestige area in which to live; and 3) the industrial developments expected to take place during the 1960's along that part of Route 128 which runs through Sector 3.

Sectors 5, 6, and 7 which fan out to the south and southwest will add just over 160,000 to their 1950 total of 370,000 persons.

Within the sectors themselves, growth by town is very uneven. But as a rule, growth in the towns next to the core will be greater than growth in those farther out. It is estimated that well over half of the population increase will take place in a band of towns just outside the core but within 15 miles of downtown Boston. Shown in Figure III, this includes 40 communities. Its outer limit is roughly coincident with Route 128.

Population Growth and Transportation

As the population increases and fans out, the capacity and efficiency of the existing transportation facilities will be taxed. New commuting patterns, especially as they relate to journeys to work, can be expected. Population increases in recent years have resulted in a growing need for circular or cross-town travel facilities to complement "in-and-out" radial highways and rapid transit lines. The projected outward flows of population can be expected to enlarge this need.

Transportation planning is intricate because a new highway or rapid transit extension designed to meet an existing need will itself become a new influence changing the area it serves. That is, the future locations of housing, industry and commerce depend on present rapid transit, highway, and interchange planning. The programming and construction of highways and rapid transit extensions should, therefore, reflect prospective needs as well as current requirements.

Some of the present transportation planning, which is based mainly on the 1945 population distribution and its travel patterns, may already be obsolete. If it is to be updated and if a sound program of land, population, and economic planning is to be formulated, it will be necessary to reconsider:

1. The kinds, capacity and location of new facilities that will be required to service adequately a population which is increasingly distant from the central city and dispersed in the surrounding areas;
2. The specific need for a circumferential rapid transit extension, in addition to the extensions urged for the radials out of downtown Boston; and
3. The probable impact on the distribution of population and economic activity of all proposed highway facilities with special attention paid to the impact of the planned circumferential Route 495, the proposed southeast and northeast expressways, and the extensions of Routes 2 and 3 into downtown Boston.

The Implications of Growth for Public Utilities

By 1970 between 1,400,000 and 1,700,000 will reside in communities outside the Metropolitan District Commission's sewer and water districts. Many of these towns and cities will have to find new water supplies or face the prospect of growing shortages. Expanded facilities for the collection and treatment of sewage will also be needed. To meet requirements such as these where joint action is mandatory, the time for planning and study is at hand.

Recreation and Open Space Requirements

The growth of population raises serious doubts as to the adequacy of existing MDC recreation facilities. By 1970, the population residing in the present MDC park district will be about 2,200,000. But most of the population increase to 1970 and after will take place beyond the existing park district. The projected population growth will require in excess of 60,000 acres of vacant and rural land for neighborhood residential purposes. This is easily available, but if it is indiscriminately taken out of the existing supply, many fine potential sites of adequate size for parks and open space will be ruined. It is essential that the comprehensive recreation plan published by the MDC in 1956 be carried out if the Greater Boston area is to maintain adequate park and recreation facilities.

The Future Requirements of Industrial and Commercial Land

Though Greater Boston is not primarily a manufacturing area, there is a need to conserve adequate amounts of industrial land in good locations for industrial purposes. Such action is particularly important as the major concentration and growth of manufacturing will occur in the areas of greatest population increase. Residential requirements for the population increases projected along Route 128 are already competing for the few remaining potential industrial sites in that area. These will be lost to industry unless they are protected by zoning or

immediate acquisition for future industrial development.

Sectors 2, 4, and 8 are the most likely to gain substantially in employment because large segments of Greater Boston's labor force reside within easy driving distance of all possible industrial or commercial locations in these sectors. As a result, these three regions face the greatest future demand for industrial land. Relatively small population increments projected for Sectors 5, 6, and 7 suggest no relative increase in the foreseeable future either in employment or in the demand for residential land.

Methodology and Statistics

The 1970 population projected for the GBESC area as a whole was based on the application of the cohort-survival method to United States Census data for 1950. This technique yielded an overall figure by broad age and sex groupings. No attempt was made to apply this method to make projections by town because of the complexities of internal migration, differences among the towns in fertility rates and variations in the age-sex structure of towns.[2]

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[2] Individual city and town population projections based on other techniques have been made for the 65 cities and towns in the Boston Standard Metropolitan Area. In only a few instances are there important differences between these projections and the estimates presented in this report. See, Sweetser, F. L., 'Greater Boston's 1970 Population: Part II," Boston University Business Review, Volume 5, No. 2, Fall, 1958.

The first step in the procedure used here to make the estimates by town was to calculate the share each city and town had of Greater Boston's total population at five-year intervals between 1925 and 1955. The trends in these shares were then examined mainly for changes in trend after 1940. A probable 1970 share for each city and town was then determined and applied to the 3,738,000 total to yield preliminary absolute population estimates by town.

These town and city estimates were then checked for reasonableness on the basis of:

1. the land available for residential development;
2. recent rates of residential construction;
3. the town's relationship to the transportation network; and
4. estimates of the towns' level of population.

As a result of these checks, some adjustments were made to arrive at the final projections presented here.

The projections by town reflect then both simple statistical techniques and qualitative judgments. It would have been desirable to use more elaborate methods such as gravitational land use models and density models but the data necessary for these techniques was missing.[3]

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[3] See, for example, Walter G. Hansen, Accessibility and Residential Growth, unpublished Master's thesis, M.I.T., June, 1959, and Klopprodt, Allocating Population to Small Areas, Chicago, Area Transportation Study Pamphlet, June, 1957. Current studies of land use in the GBESC area will permit the application of a land use model in any future population projections by cities and towns.

It should be noted that the town estimates are "controlled" by the total figure, in this case, 3,738,000. The assumptions which underlie this aggregate are such that the figure falls midway between extremes of optimism and pessimism about future growth. It has been estimated that there is only about one chance in four that variation from this total will exceed plus or minus 4 per cent.[4] The individual town estimates are therefore subject to the same degree of error.

Finally, it is important to note that these projections assume that new major highway construction, either recently completed or proposed for the coming decade, will have little effect on the growth and distribution of population in the Greater Boston Area.

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[1] Sweetser, F. L., The Population of Greater Boston Projected to 1970, Economic Base Report No. 2, Greater Boston Economic Study Committee, June, 1959, p. 11.

APPENDIX A:

THE POPULATION OF THE CITIES AND TOWNS OF GREATER BOSTON APRIL 1950, ESTIMATED 1959, AND PROJECTED 1970

Notes: The population estimates for January, 1959, are based on household estimates by utility companies and population estimates by local planning boards and by the Greater Boston Chamber of Commerce. In some cases more than one figure is shown for 1959 to illustrate the degree of variation which can occur when population is estimated on a town by town basis.

* Includes institutional, university, and resident military populations.

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Abington	7,200	9,800		14,800
Acton	3,500	5,800		8,100
Andover	12,400	n. a.		20,200
Arlington	44,400	51,000 52,300	57,600	54,600
Ashland	3,500	6,800		9,300
Attleboro	23,800	21,100		29,200
Avon	2,700	n. a.		3,700
Ayer	5,700*	4,400		7,100*
Bedford	5,200	7,900 10,000	10,200 10,400	16,400
Bellingham	4,100	n. a.		7,800
Belmont	27,400	29,200 31,300		32,100
Berlin	1,300	n. a.		2,200
Beverly	28,900	33,600 35,300		37,800
Billerica	11,100	16,700		23,200

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Bolton	1,000	n.a.		1,200
Boston*	801,400	655,900 711,000	789,400 791,400	728,900
Boxborough	400	n.a.		1,200
Boxford	900	n.a.		1,900
Braintree	23,200	29,700 31,500		38,900
Bridgewater	9,500	10,400		11,200
Brockton	62,900	65,600 66,300		65,800
Brookline	57,600	57,300 62,800	64,900	66,500
Burlington	3,200	9,700 9,800		13,500
Cambridge*	120,700	111,100 117,700	120,800	115,900
Canton	7,500	11,300 11,600	11,700	14,600
Carlisle	900	1,300 1,400		1,900
Chelmsford	9,400	14,100		16,800
Chelsea	38,900	36,200 36,900	37,600	35,100
Cohasset	3,700	5,500		7,100
Concord	8,600	12,000 12,200		15,000
Danvers	15,700	20,900		26,500
Dedham	18,500	23,200		26,500
Dover	1,700	2,500 2,600	2,700	3,500
Dracut	8,700	13,100		15,000

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Dunstable	500	800		1,200
Duxbury	3,200	n.a.		6,400
East Bridgewater	4,400	4,400 5,100		6,700
Easton	6,200	7,200 7,800		9,300
Essex	1,800	n.a.		2,600
Everett	46,000	45,700 47,600		45,200
Foxborough	7,000	9,800		12,000
Framingham	28,100	38,800 46,500	54,700	59,800
Franklin	8,000	n.a.		9,700
Georgetown	2,400	n.a.		3,700
Gloucester	25,200	26,200 28,400		29,200
Groton	2,900	4,000		4,500
Groveland	2,300	n.a.		3,100
Halifax	900	n.a.		1,900
Hamilton	2,800	n.a.		6,000
Hanover	3,400	4,700		5,800
Hanson	3,300	3,600		5,200
Harvard*	4,000	n.a.		4,500
Haverhill	47,300	n.a.		46,400
Hingham	10,700	13,500 14,800		19,400

Town	U. S. Census April, 1950	Estimated January, 1959		Projected 1970
Holbrook	4,000	7,400		9,000
Holliston	3,800	5,400		6,800
Hopedale	3,500	n.a.		4,900
Hopkinton	3,500	4,900		6,000
Hudson	8,200	n.a.		10,100
Hull	3,400	3,700 4,600	5,400	6,000
Ipswich	6,900	8,500		9,700
Kingston	3,500	n.a.		5,600
Lawrence	80,500	75,200		73,600
Lexington	17,300	25,700 28,200		34,000
Lincoln	2,400	3,700 3,800		4,700
Littleton	2,300	4,300 4,400		4,900
Lowell	97,200	91,400 94,500		89,700
Lynn	99,700	94,600 103,300		97,900
Lynnfield	3,900	7,000		9,700
Malden	59,800	61,100 62,800		62,800
Manchester	2,900	3,900 4,500		5,400
Mansfield	7,200	7,700 8,800		9,700
Marblehead	13,800	16,500 19,300		22,400
Marlborough	15,800	n.a.		18,700

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Marshfield	3,300	6,300		8,200
Maynard	7,000	7,500 7,800		8,200
Medfield	4,500	5,200 6,200		7,200
Medford	66,100	69,400		67,700
Medway	4,200	4,500		5,200
Melrose	27,000	28,900 31,100		33,800
Mendon	1,600	n.a.		2,600
Methuen	24,500	n.a.		32,100
Middleborough	10,200	n.a.		13,800
Middleton	2,900	n.a.		4,500
Milford	15,400	n.a.		17,600
Millis	2,600	4,000		5,000
Milton	22,400	25,900 26,500		32,900
Nahant	2,700	3,100 4,300		4,500
Natick	19,800	26,200 27,200		34,400
Needham	16,300	23,600 24,800	25,400	34,000
Newbury	2,000	n.a.		3,000
Newton	82,000	89,400 90,700	91,100 95,100	95,300
Norfolk	2,700	4,000		5,200
North Andover	8,500	n.a.		11,200

Town	U.S. Census April, 1950	Estimated January, 1959	Projected 1970
North Attleborough	12,100	n. a.	16,400
North Reading	4,400	6,800 7,500	9,700
Northborough	3,100	n. a.	7,100
Norton	4,400	n. a.	7,100
Norwell	2,500	n. a.	6,700
Norwood	16,600	23,200	27,300
Peabody	22,600	29,900 30,000	34,800
Pembroke	2,600	n. a.	6,400
Plainville	2,100	n. a.	3,400
Plympton	700	n. a.	700
Quincy	83,800	86,800 90,000 89,900 91,400	92,700
Randolph	10,000	16,100	19,800
Raynham	2,400	n. a.	4,500
Reading	14,000	18,000 18,800	22,400
Revere	36,800	41,200 42,000	43,700
Rockland	9,000	11,900	13,500
Rockport	4,200	4,300	5,600
Rowley	1,800	n. a.	2,600
Salem	41,900	41,400 43,000	44,500
Saugus	17,200	20,300 21,800	22,800
Scituate	6,000	7,600 9,600	12,000

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Sharon	4,800	8,200 9,600		13,500
Sherborn	1,200	1,700		1,900
Somerville	102,400	96,000 98,300	100,700	97,200
Southborough	2,800	n.a.		4,500
Stoneham	13,200	16,000 16,800		20,200
Stoughton	11,100	13,600 14,500		19,400
Stow	1,700	n.a.		3,000
Sudbury	2,600	5,300 5,600	5,800	7,100
Swampscott	11,600	12,700		13,800
Taunton	40,100	n.a.		45,600
Tewksbury	7,500	14,300		16,800
Topsfield	1,400	n.a.		3,400
Tyngsborough	2,100	3,300		4,900
Upton	2,700	n.a.		3,700
Wakefield	19,600	23,400 24,900		27,700
Walpole	9,100	12,600 13,100	13,600	15,000
Waltham	47,200	55,500 57,200		62,100
Watertown	37,300	39,500 39,600	40,200	43,700
Wayland	4,400	8,500 9,700		13,100
Wellesley	20,500	25,400 25,600		28,000

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Wenham	1,600	2,400		3,400
West Bridgewater	4,100	5,400		6,000
West Newbury	1,600	n. a.		1,900
Westborough	7,400	n. a.		9,700
Westford	4,300	5,800		6,200
Weston	5,000	7,400 8,200		9,900
Westwood	5,800	8,900 9,500		13,500
Weymouth	32,700	42,700 46,100		54,900
Whitman	8,400	9,100 9,700		10,800
Wilmington	7,000	10,800 11,800		13,800
Winchester	15,500	19,400 10,600	19,900	23,200
Winthrop	19,500	19,500 21,800		22,400
Woburn	20,500	29,200 29,900	31,400	33,600
Wrentham	5,300	n. a.		8,200

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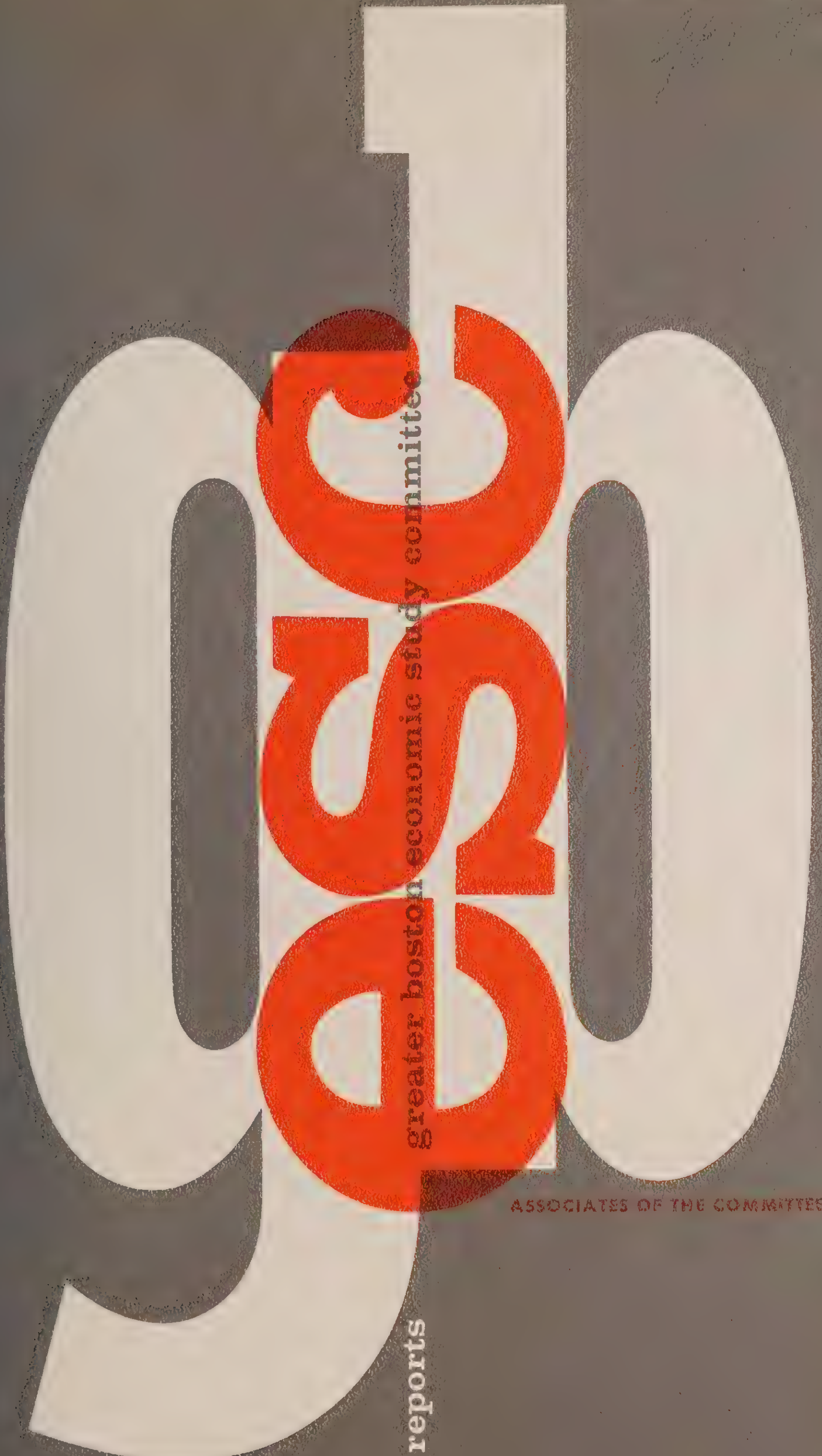

greater boston economic study committee

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economic base reports

population of the cities and towns of greater boston projected to 1970

4

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The Greater Boston Economic Study Committee (GBESC) was organized in 1957. The Committee presently has eighteen members--fifteen are businessmen, one is a newspaper editor, and two are the deans of schools of business administration. To help guide the work of the Committee, a Research Advisory Committee was appointed. This group consists of leading scholars and experts in metropolitan affairs. In 1959, the GBESC became Associates of the Committee for Economic Development (CED). The GBESC feels that this association has helped to broaden its own metropolitan program and organization.

The GBESC has two objectives. One is the gathering, organization, and circulation of basic economic data which will advance an understanding of the forces and trends operating in the metropolitan area. The other is to formulate policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

This report is one of the background papers on metropolitan economic information. It was prepared under the supervision of Mr. John L. Culp of the GBESC research staff. The GBESC hopes that this and other economic base materials which it publishes will continue to serve the growing need for reliable information on the Boston metropolitan region.

economic base report **4**

the population of the cities and towns of greater boston projected to 1970

December, 1959

greater boston economic study committee

SSOCIATES OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT 200 BERKELEY STREET, BOSTON 17, MASSACHUSETTS, LIBERTY 2-2146

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The cover, graphic materials, and report were designed by Muriel R. Cooper. Mr. Eugene Calabro performed the extensive statistical computations required for the preparation of this report.

Introduction and Summary

The population of Greater Boston will increase to 3,738,000 persons by 1970.[1] This estimate represents an increase of 607,000 persons over 1950, and was obtained by applying the cohort-survival method to United States Census Bureau data for that year. The cohort-survival technique did not yield estimates on a town-by-town basis. The purpose of this report is to present these estimates by allocating the overall figure to the 149 towns in the GBESC area. As presented here, these city and town projections show that:

1. The population of the core cities, Boston and 11 others, will decline slightly.
2. A band of forty cities and towns ringing the core but within fifteen miles of the State House will absorb almost 60 per cent of the increase.
3. Growth will continue mainly along the radial transportation routes that fan out from the core area with the greatest increases taking place in wedge-shaped sectors to the west, northwest and southeast.

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[1] Sweetser, F. L., The Population of Greater Boston Projected to 1970, Economic Base Report No. 2, Greater Boston Economic Study Committee, June, 1959.

These population increases will consume 95 square miles for urban residential neighborhood purposes. As the GBESC area contains at least 1,500 square miles of vacant or rural land, this obviously does not present a problem of land shortages as such. But the way in which this added population is distributed on the land is important because it affects a wide range of public and private decisions. These decisions, though interrelated, are made independently of each other, and, in the aggregate, they set the basic pattern of land use and economic development. In this connection, the finding that the area between the radial highways, notably along Route 128, is being peopled at an accelerated rate is especially important. At the present time, the amount of land developable for residential purposes in most of these towns is nearly exhausted. Unless higher population densities are permitted, this land will be almost fully occupied by 1970, and after that date, additions to the population will occur in the cities and towns further out. Obviously then, if the community is to assure for itself growth free from the distorting effects of population pressure, it will be necessary to define specific community objectives and to set appropriate standards. These must relate to:

1. Transportation planning and priorities for the construction of new highways and rapid transit extensions;

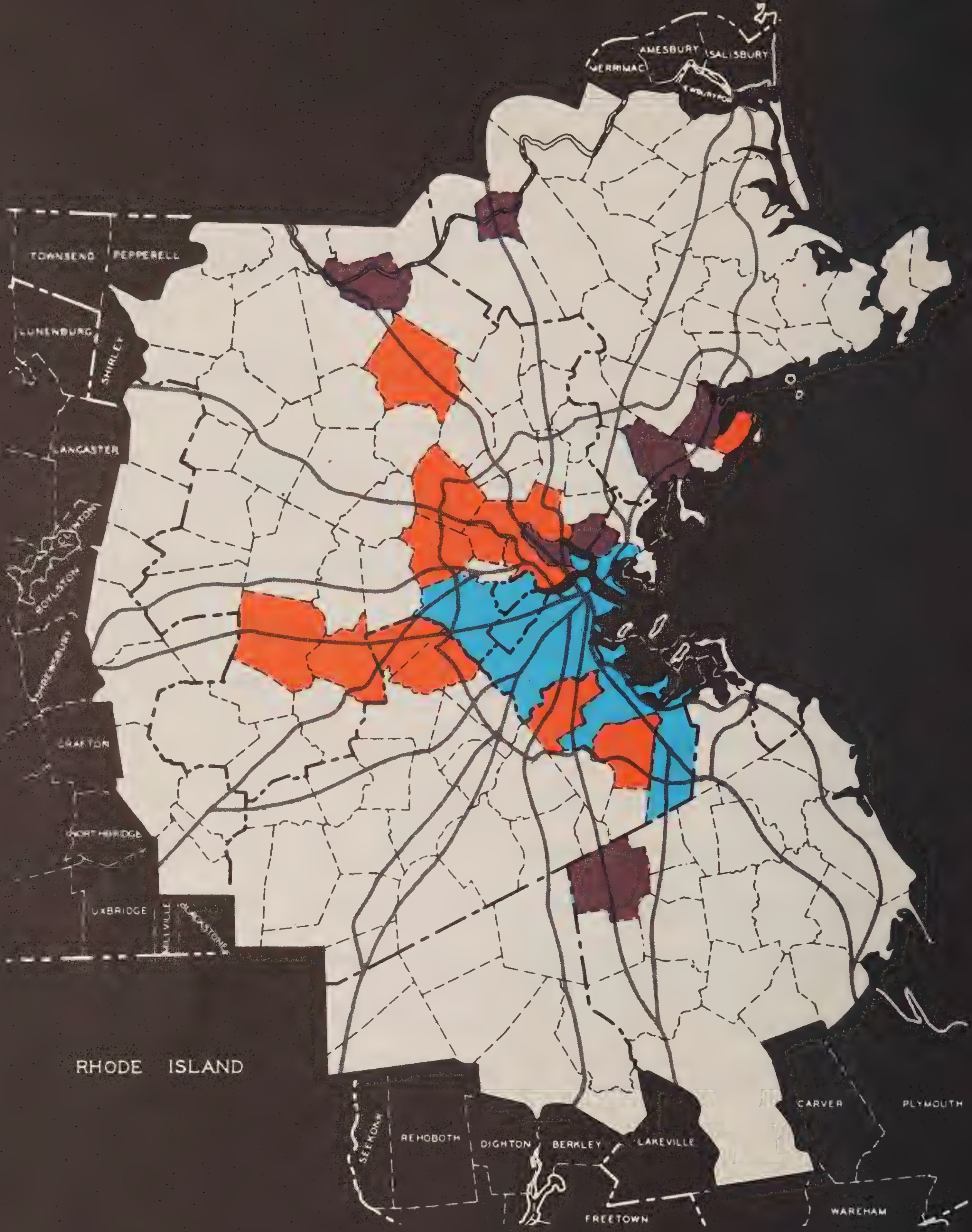
2. The timing, coordination, and location of major capital outlays for sewer and water facilities;
3. The location and land requirements for recreation and other open space uses;
4. The location and land requirements for industrial and commercial activities; and
5. Density standards and the location of residential populations.

The projected trends, their implications for transportation and land utilization, and the statistical methods employed are described in detail below. A table showing city and town populations for 1950, 1959, and projected 1970 is appended.

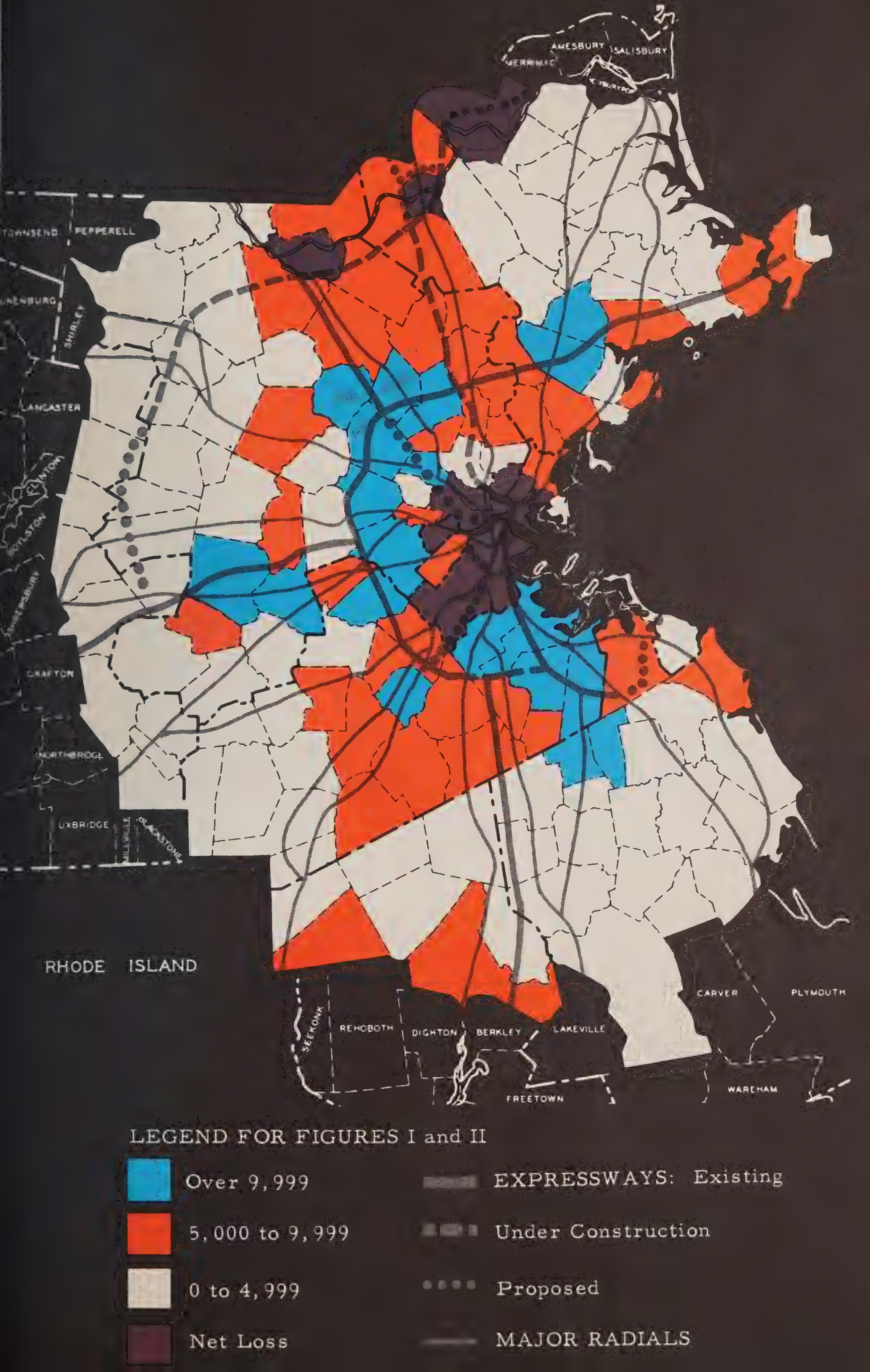
The General Pattern of Population Growth

The growth pattern and present distribution of Greater Boston's population is explained by the transportation network. Historically, the large concentrations of people have developed along the superior rail and highway connectors between the city of Boston and other important regional and national centers. These transportation facilities provide the best access to the central city, and correspondingly, they have had the greatest location advantages for both residential and industrual purposes. Road and rail facilities to points of lesser importance, such as Cape Cod, Fall River, and northern New England, have generally been

Absolute Population Change 1930-1950 FIGU



Absolute Population Change 1950-1970 FIGURE II



somewhat inferior. As a result, smaller concentrations of people and industry have developed along them.

Figures I and II show the population changes by city and town for the period 1930-1950, and 1950-1970, respectively. The difference between them is essentially one of degree. In the earlier period, the major radial expansions of population began to develop to the west, northwest and southeast. The process of filling in between the radials, however, was confined to Boston and a small area immediately adjacent to it. The outward radial movements have continued since 1950, and they will persist to 1970. The filling in between the radials will be accelerated and will extend to a distance of about 15 miles from downtown Boston, as the process follows a path coinciding with the circumferential highway, Route 128. The proposed outer circumferential, Route 495, is still in the first stages of planning and construction, and it will not be completed in time to affect the pattern of population growth to 1970.

The Population of the Core

The population of the core cities--Boston and 11 others as shown in Figure III--will fall to 1,385,600 by 1970. This loss, 45,300 persons, represents a 3.2 per cent decline from 1950. Not all of the 12 cities and towns in the core are expected to lose population, but the losses estimated for five of them, Boston, Cambridge, Somerville, Everett, and Chelsea, will more than offset any increases which may occur in the remaining seven.

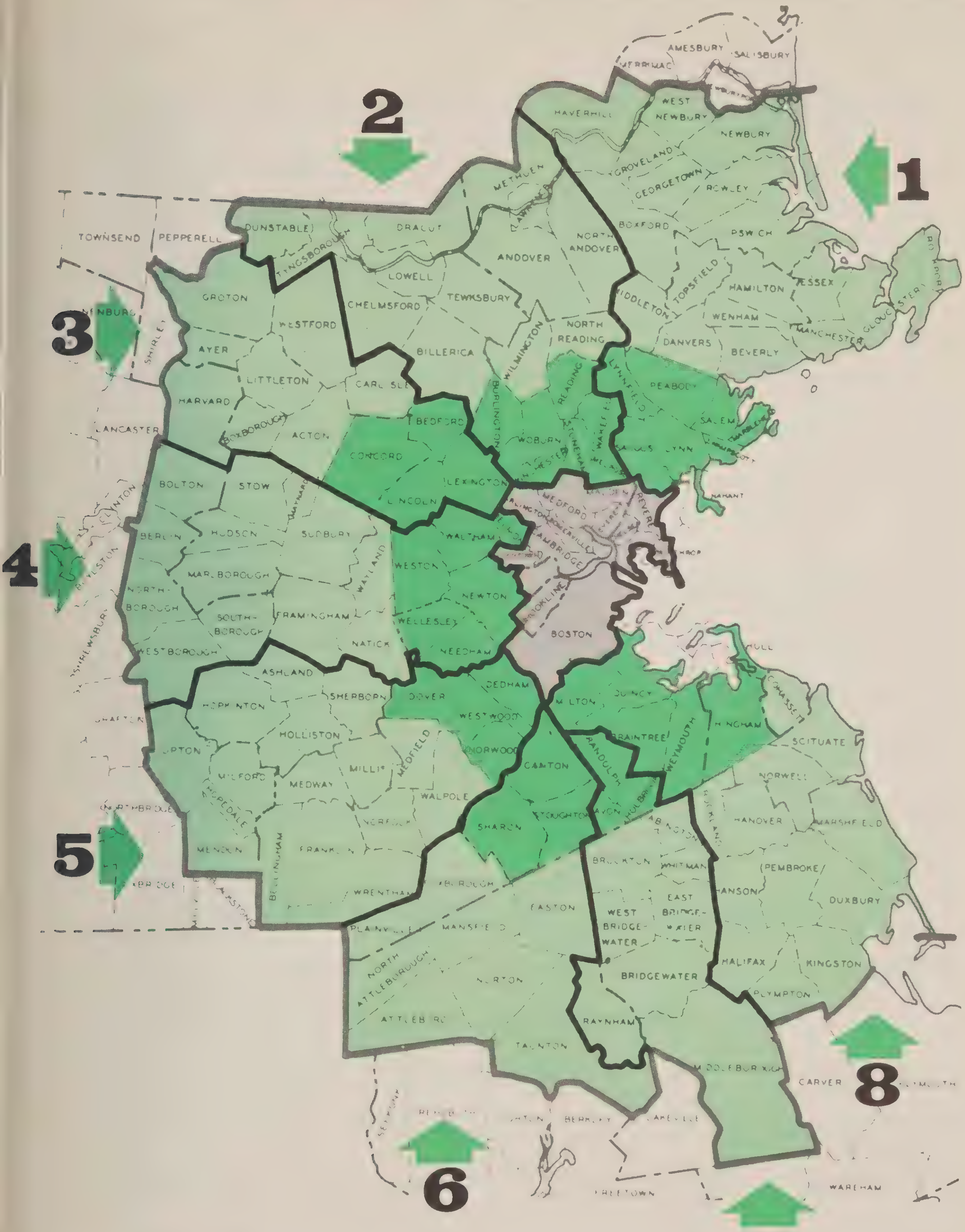
TABLE I

POPULATION GROWTH IN GREATER BOSTON BY SECTOR, 1950 AND 1970

Sector	Definition of the Area	U.S. Census Population 1950	Population Projected 1970	Net Change	Percent Change
The Core	12 central cities	1,430,900	1,385,600	-45,300	-3.2
Sector 1	along the North Shore	366,000	447,100	81,100	22.2
Sector 2	between Routes 28 & 3	386,800	502,600	115,800	29.9
Sector 3	along Route 2	57,500	108,500	51,000	88.7
Sector 4	between Routes 20 & 9	301,600	440,500	138,900	46.1
Sector 5	between Routes 16 and 109	117,800	186,900	69,100	58.7
Sector 6	along Route 1 south	126,300	178,700	52,400	41.5
Sector 7	between Routes 18 and 28 south	125,800	166,100	40,300	32.0
Sector 8	along the South Shore	218,300	324,300	106,000	48.6
GBESC Area	149 cities and towns	3,131,300	3,738,000	606,700	19.4

Note: The columns do not sum to the totals shown due to rounding errors.

GBESC STUDY AREA: Its Core, Sectors and Growth Bands FIGURE III



🟫 CORE: 12 Cities and Towns

🟩 INNER BAND: 40 Cities and Towns

🟩 OUTER BAND: 97 Cities and Towns

There is no evidence to support the hope that this declining trend at the center will be reversed. However, the rate of decline projected for the period 1950-1970 is slower than that for the preceding period, and this suggests that the population of the core may stabilize at about the level projected for 1970. But despite its relative decline, the core will remain the area of greatest population density and absolute concentration because growth elsewhere in the area will tend to be widely dispersed.

Population Growth Beyond the Core City

One important result of the town-by-town projections is that in the area beyond the core, the towns group themselves into fairly well defined growth sectors. These, shown in Figure III are numbered 1 through 8 as they fan down from the North Shore around the core and on through to the South Shore. The projected growth by sector is shown in Table I.

The greatest absolute growth, almost 140,000 persons in the two decades under review, will occur in Sector 4. This radial extends directly west and is dominated by Routes 20 and 9. Sector 2 to the northwest and Sector 8 along the South Shore will also experience increases of over 100,000 persons each. As a group, these three sectors will account for 60 per cent of all of the growth in the Greater Boston area between 1950 and 1970.

Sectors 1 and 3 represent the extremes of contrast in projected population growth. The former, running along the North Shore was the second largest of the 8 in 1950. It will experience the slowest growth rate, 22.2 per cent. Sector 3, the smallest of the 8 in 1950, will increase its population by 88.7 per cent by 1970. This, the greatest rate of growth projected for any of the 8 sectors, is due to three influences: 1) the improvements to Route 2 which have increased the area's time-distance proximity to downtown Boston; 2) the developing image of the region as a prestige area in which to live; and 3) the industrial developments expected to take place during the 1960's along that part of Route 128 which runs through Sector 3.

Sectors 5, 6, and 7 which fan out to the south and southwest will add just over 160,000 to their 1950 total of 370,000 persons.

Within the sectors themselves, growth by town is very uneven. But as a rule, growth in the towns next to the core will be greater than growth in those farther out. It is estimated that well over half of the population increase will take place in a band of towns just outside the core but within 15 miles of downtown Boston. Shown in Figure III, this includes 40 communities. Its outer limit is roughly coincident with Route 128.

Population Growth and Transportation

As the population increases and fans out, the capacity and efficiency of the existing transportation facilities will be taxed. New commuting patterns, especially as they relate to journeys to work, can be expected. Population increases in recent years have resulted in a growing need for circular or cross-town travel facilities to complement "in-and-out" radial highways and rapid transit lines. The projected outward flows of population can be expected to enlarge this need.

Transportation planning is intricate because a new highway or rapid transit extension designed to meet an existing need will itself become a new influence changing the area it serves. That is, the future locations of housing, industry and commerce depend on present rapid transit, highway, and interchange planning. The programming and construction of highways and rapid transit extensions should, therefore, reflect prospective needs as well as current requirements.

Some of the present transportation planning, which is based mainly on the 1945 population distribution and its travel patterns, may already be obsolete. If it is to be updated and if a sound program of land, population, and economic planning is to be formulated, it will be necessary to reconsider:

1. The kinds, capacity and location of new facilities that will be required to service adequately a population which is increasingly distant from the central city and dispersed in the surrounding areas;
2. The specific need for a circumferential rapid transit extension, in addition to the extensions urged for the radials out of downtown Boston; and
3. The probable impact on the distribution of population and economic activity of all proposed highway facilities with special attention paid to the impact of the planned circumferential Route 495, the proposed southeast and northeast expressways, and the extensions of Routes 2 and 3 into downtown Boston.

The Implications of Growth for Public Utilities

By 1970 between 1,400,000 and 1,700,000 will reside in communities outside the Metropolitan District Commission's sewer and water districts. Many of these towns and cities will have to find new water supplies or face the prospect of growing shortages. Expanded facilities for the collection and treatment of sewage will also be needed. To meet requirements such as these where joint action is mandatory, the time for planning and study is at hand.

Recreation and Open Space Requirements

The growth of population raises serious doubts as to the adequacy of existing MDC recreation facilities. By 1970, the population residing in the present MDC park district will be about 2,200,000. But most of the population increase to 1970 and after will take place beyond the existing park district. The projected population growth will require in excess of 60,000 acres of vacant and rural land for neighborhood residential purposes. This is easily available, but if it is indiscriminately taken out of the existing supply, many fine potential sites of adequate size for parks and open space will be ruined. It is essential that the comprehensive recreation plan published by the MDC in 1956 be carried out if the Greater Boston area is to maintain adequate park and recreation facilities.

The Future Requirements of Industrial and Commercial Land

Though Greater Boston is not primarily a manufacturing area, there is a need to conserve adequate amounts of industrial land in good locations for industrial purposes. Such action is particularly important as the major concentration and growth of manufacturing will occur in the areas of greatest population increase. Residential requirements for the population increases projected along Route 128 are already competing for the few remaining potential industrial sites in that area. These will be lost to industry unless they are protected by zoning or

immediate acquisition for future industrial development.

Sectors 2, 4, and 8 are the most likely to gain substantially in employment because large segments of Greater Boston's labor force reside within easy driving distance of all possible industrial or commercial locations in these sectors. As a result, these three regions face the greatest future demand for industrial land. Relatively small population increments projected for Sectors 5, 6, and 7 suggest no relative increase in the foreseeable future either in employment or in the demand for residential land.

Methodology and Statistics

The 1970 population projected for the GBESC area as a whole was based on the application of the cohort-survival method to United States Census data for 1950. This technique yielded an overall figure by broad age and sex groupings. No attempt was made to apply this method to make projections by town because of the complexities of internal migration, differences among the towns in fertility rates and variations in the age-sex structure of towns.[2]

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[2] Individual city and town population projections based on other techniques have been made for the 65 cities and towns in the Boston Standard Metropolitan Area. In only a few instances are there important differences between these projections and the estimates presented in this report. See, Sweetser, F. L., 'Greater Boston's 1970 Population: Part II," Boston University Business Review, Volume 5, No. 2, Fall, 1958.

The first step in the procedure used here to make the estimates by town was to calculate the share each city and town had of Greater Boston's total population at five-year intervals between 1925 and 1955. The trends in these shares were then examined mainly for changes in trend after 1940. A probable 1970 share for each city and town was then determined and applied to the 3,738,000 total to yield preliminary absolute population estimates by town.

These town and city estimates were then checked for reasonableness on the basis of:

1. the land available for residential development;
2. recent rates of residential construction;
3. the town's relationship to the transportation network; and
4. estimates of the towns' level of population.

As a result of these checks, some adjustments were made to arrive at the final projections presented here.

The projections by town reflect then both simple statistical techniques and qualitative judgments. It would have been desirable to use more elaborate methods such as gravitational land use models and density models but the data necessary for these techniques was missing.[3]

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[3] See, for example, Walter G. Hansen, Accessibility and Residential Growth, unpublished Master's thesis, M.I.T., June, 1959, and Klopprodt, Allocating Population to Small Areas, Chicago, Area Transportation Study Pamphlet, June, 1957. Current studies of land use in the GBESC area will permit the application of a land use model in any future population projections by cities and towns.

It should be noted that the town estimates are "controlled" by the total figure, in this case, 3,738,000. The assumptions which underlie this aggregate are such that the figure falls midway between extremes of optimism and pessimism about future growth. It has been estimated that there is only about one chance in four that variation from this total will exceed plus or minus 4 per cent.[4] The individual town estimates are therefore subject to the same degree of error.

Finally, it is important to note that these projections assume that new major highway construction, either recently completed or proposed for the coming decade, will have little effect on the growth and distribution of population in the Greater Boston Area.

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[1] Sweetser, F. L., The Population of Greater Boston Projected to 1970, Economic Base Report No. 2, Greater Boston Economic Study Committee, June, 1959, p. 11.

APPENDIX A:

THE POPULATION OF THE CITIES AND TOWNS OF GREATER BOSTON APRIL 1950, ESTIMATED 1959, AND PROJECTED 1970

Notes: The population estimates for January, 1959, are based on household estimates by utility companies and population estimates by local planning boards and by the Greater Boston Chamber of Commerce. In some cases more than one figure is shown for 1959 to illustrate the degree of variation which can occur when population is estimated on a town by town basis.

* Includes institutional, university, and resident military populations.

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Abington	7,200	9,800		14,800
Acton	3,500	5,800		8,100
Andover	12,400	n.a.		20,200
Arlington	44,400	51,000 52,300	57,600	54,600
Ashland	3,500	6,800		9,300
Attleboro	23,800	21,100		29,200
Avon	2,700	n.a.		3,700
Ayer	5,700*	4,400		7,100*
Bedford	5,200	7,900 10,000	10,200 10,400	16,400
Bellingham	4,100	n.a.		7,800
Belmont	27,400	29,200 31,300		32,100
Berlin	1,300	n.a.		2,200
Beverly	28,900	33,600 35,300		37,800
Billerica	11,100	16,700		23,200

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Bolton	1,000	n.a.		1,200
Boston*	801,400	655,900 711,000	789,400 791,400	728,900
Boxborough	400	n.a.		1,200
Boxford	900	n.a.		1,900
Braintree	23,200	29,700 31,500		38,900
Bridgewater	9,500	10,400		11,200
Brockton	62,900	65,600 66,300		65,800
Brookline	57,600	57,300 62,800	64,900	66,500
Burlington	3,200	9,700 9,800		13,500
Cambridge*	120,700	111,100 117,700	120,800	115,900
Canton	7,500	11,300 11,600	11,700	14,600
Carlisle	900	1,300 1,400		1,900
Chelmsford	9,400	14,100		16,800
Chelsea	38,900	36,200 36,900	37,600	35,100
Cohasset	3,700	5,500		7,100
Concord	8,600	12,000 12,200		15,000
Danvers	15,700	20,900		26,500
Dedham	18,500	23,200		26,500
Dover	1,700	2,500 2,600	2,700	3,500
Dracut	8,700	13,100		15,000

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Dunstable	500	800		1,200
Duxbury	3,200	n.a.		6,400
East Bridgewater	4,400	4,400 5,100		6,700
Easton	6,200	7,200 7,800		9,300
Essex	1,800	n.a.		2,600
Everett	46,000	45,700 47,600		45,200
Foxborough	7,000	9,800		12,000
Framingham	28,100	38,800 46,500	54,700	59,800
Franklin	8,000	n.a.		9,700
Georgetown	2,400	n.a.		3,700
Gloucester	25,200	26,200 28,400		29,200
Groton	2,900	4,000		4,500
Groveland	2,300	n.a.		3,100
Halifax	900	n.a.		1,900
Hamilton	2,800	n.a.		6,000
Hanover	3,400	4,700		5,800
Hanson	3,300	3,600		5,200
Harvard*	4,000	n.a.		4,500
Haverhill	47,300	n.a.		46,400
Hingham	10,700	13,500 14,800		19,400

Town	U. S. Census April, 1950	Estimated January, 1959	Projected 1970
Holbrook	4,000	7,400	9,000
Holliston	3,800	5,400	6,800
Hopedale	3,500	n. a.	4,900
Hopkinton	3,500	4,900	6,000
Hudson	8,200	n. a.	10,100
Hull	3,400	3,700 4,600 5,400	6,000
Ipswich	6,900	8,500	9,700
Kingston	3,500	n. a.	5,600
Lawrence	80,500	75,200	73,600
Lexington	17,300	25,700 28,200	34,000
Lincoln	2,400	3,700 3,800	4,700
Littleton	2,300	4,300 4,400	4,900
Lowell	97,200	91,400 94,500	89,700
Lynn	99,700	94,600 103,300	97,900
Lynnfield	3,900	7,000	9,700
Malden	59,800	61,100 62,800	62,800
Manchester	2,900	3,900 4,500	5,400
Mansfield	7,200	7,700 8,800	9,700
Marblehead	13,800	16,500 19,300	22,400
Marlborough	15,800	n. a.	18,700

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Marshfield	3,300	6,300		8,200
Maynard	7,000	7,500 7,800		8,200
Medfield	4,500	5,200 6,200		7,200
Medford	66,100	69,400		67,700
Medway	4,200	4,500		5,200
Melrose	27,000	28,900 31,100		33,800
Mendon	1,600	n.a.		2,600
Methuen	24,500	n.a.		32,100
Middleborough	10,200	n.a.		13,800
Middleton	2,900	n.a.		4,500
Milford	15,400	n.a.		17,600
Millis	2,600	4,000		5,000
Milton	22,400	25,900 26,500		32,900
Nahant	2,700	3,100 4,300		4,500
Natick	19,800	26,200 27,200		34,400
Needham	16,300	23,600 24,800	25,400	34,000
Newbury	2,000	n.a.		3,000
Newton	82,000	89,400 90,700	91,100 95,100	95,300
Norfolk	2,700	4,000		5,200
North Andover	8,500	n.a.		11,200

Town	U.S. Census April, 1950	Estimated January, 1959	Projected 1970
North Attleborough	12,100	n. a.	16,400
North Reading	4,400	6,800 7,500	9,700
Northborough	3,100	n. a.	7,100
Norton	4,400	n. a.	7,100
Norwell	2,500	n. a.	6,700
Norwood	16,600	23,200	27,300
Peabody	22,600	29,900 30,000	34,800
Pembroke	2,600	n. a.	6,400
Plainville	2,100	n. a.	3,400
Plympton	700	n. a.	700
Quincy	83,800	86,800 90,000 89,900 91,400	92,700
Randolph	10,000	16,100	19,800
Raynham	2,400	n. a.	4,500
Reading	14,000	18,000 18,800	22,400
Revere	36,800	41,200 42,000	43,700
Rockland	9,000	11,900	13,500
Rockport	4,200	4,300	5,600
Rowley	1,800	n. a.	2,600
Salem	41,900	41,400 43,000	44,500
Saugus	17,200	20,300 21,800	22,800
Scituate	6,000	7,600 9,600	12,000

Town	U.S. Census April, 1950	Estimated January, 1959		Projected 1970
Sharon	4,800	8,200 9,600		13,500
Sherborn	1,200	1,700		1,900
Somerville	102,400	96,000 98,300	100,700	97,200
Southborough	2,800	n. a.		4,500
Stoneham	13,200	16,000 16,800		20,200
Stoughton	11,100	13,600 14,500		19,400
Stow	1,700	n. a.		3,000
Sudbury	2,600	5,300 5,600	5,800	7,100
Swampscott	11,600	12,700		13,800
Taunton	40,100	n. a.		45,600
Tewksbury	7,500	14,300		16,800
Topsfield	1,400	n. a.		3,400
Tyngsborough	2,100	3,300		4,900
Upton	2,700	n. a.		3,700
Wakefield	19,600	23,400 24,900		27,700
Walpole	9,100	12,600 13,100	13,600	15,000
Waltham	47,200	55,500 57,200		62,100
Watertown	37,300	39,500 39,600	40,200	43,700
Wayland	4,400	8,500 9,700		13,100
Wellesley	20,500	25,400 25,600		28,000

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economic base reports

5

a profile of an executive group working in greater boston

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The Greater Boston Economic Study Committee (GBESC) was organized in 1957. The Committee presently has eighteen members--fifteen are businessmen, one is a newspaper editor, and two are the deans of schools of business administration. To help guide the work of the Committee, a Research Advisory Committee was appointed. This group consists of leading scholars and experts in metropolitan affairs. In 1959, the GBESC became Associates of the Committee for Economic Development (CED). The GBESC feels that this association has helped to broaden its own metropolitan program and organization.

The GBESC has two objectives. One is the gathering, organization, and circulation of basic economic data which will advance an understanding of the forces and trends operating in the metropolitan area. The other is to formulate policy recommendations which may both stimulate and advise leaders in metropolitan affairs.

This report was prepared by members of the Harvard Business School Association of Boston. The authors alone are responsible for its content and conclusion. The GBESC hopes that this and other economic base materials which it publishes will continue to serve the growing need for reliable information on the Boston Metropolitan Region.

economic base report 5

a profile of an executive group working in greater boston

by

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January, 1960

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Finally, the authors wish to thank the 1,109 business school graduate who completed the questionnaire and made this report possible thereby.

I. INTRODUCTION AND SUMMARY

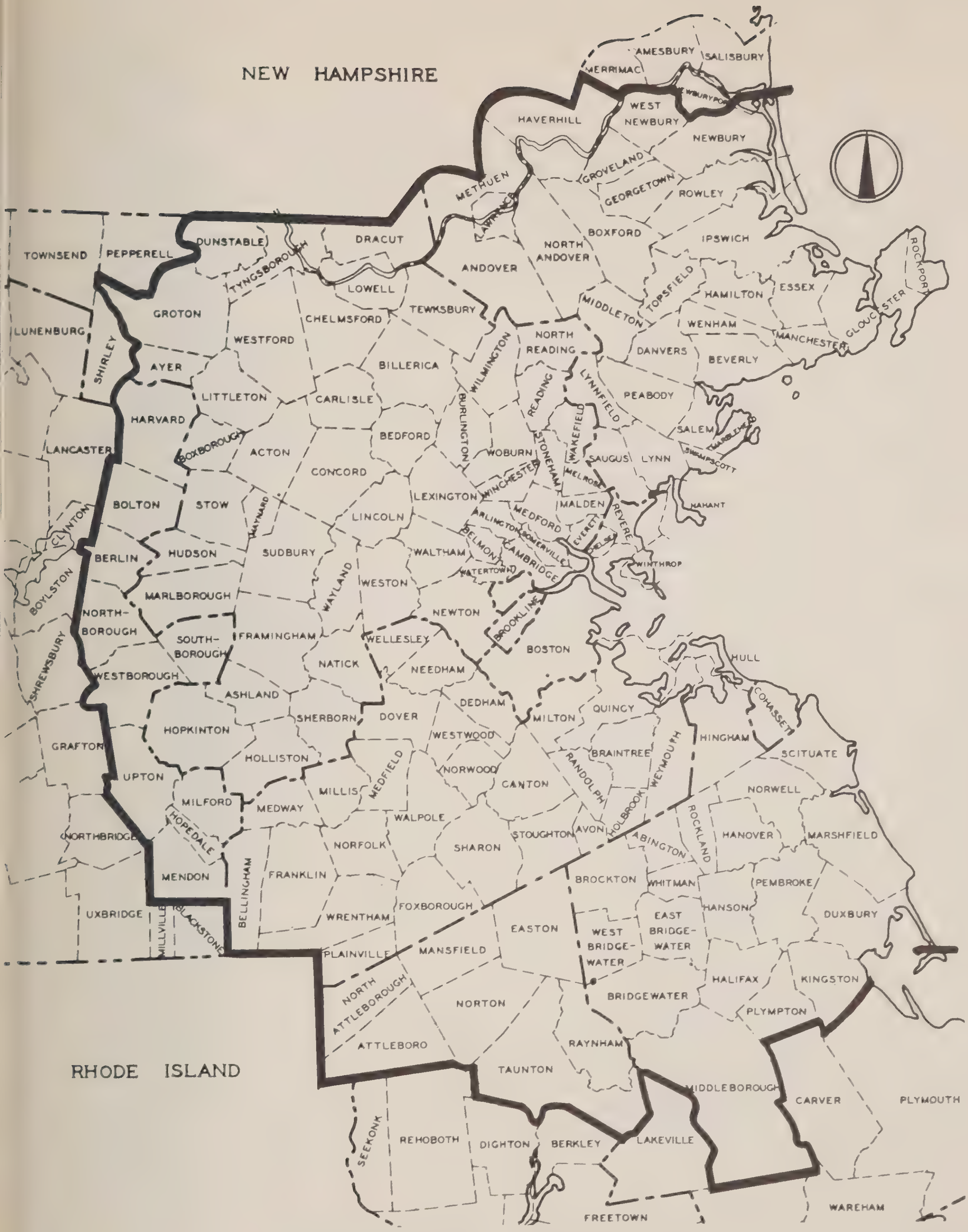
The first objective of this study is to develop a factual and attitudinal profile of those residents in the Greater Boston area who are graduates of a local business school. To this end, a questionnaire was mailed to all of the persons who have been granted higher degrees in business administration by either Harvard University, Boston University, Northeastern University, or the Massachusetts Institute of Technology. All told, there are 3,085 such alumni living in the Greater Boston area, and 40 per cent of them completed and returned the questionnaires. The results reported in this study are based on this sample.

The second purpose of the study is to draw inferences from the statements of fact and attitude. These inferences go beyond the questionnaire responses and are primarily concerned with the contrast between the group's relatively high economic and social standing in the community on the one hand, and its low participation in civic and community affairs on the other.

1. The Group Profile

The 1,109 questionnaire respondents constitute a highly select segment of Greater Boston's labor force. The median age for the group is roughly forty years. Most of them are native to the Boston area. Almost all are married men, and three out of every four are home owners. Less than half have lived at their present residence for more than seven years. Their families are significantly smaller than the national average, and they reside mainly in the residential suburbs to the west of Boston.

The income of the group is well above the national average--in fact, only one in three earns less than $10,000 a year. By occupation, these graduates are heavily concentrated in industries manufacturing technical products, in finance and professional activities, and in educational services. Two thirds work either in Boston or Cambridge, and almost half work in companies with over one thousand employees. Within these companies, they are represented in almost every kind of business function, but within the particular function, they tend to be in management positions.



gesc

study area

Over 60 per cent rely on the automobile to get to work, and two thirds of them require up to an hour daily to commute. While three in ten are free of job assignments that take them thirty miles from their business headquarters, only another three in ten spend more than 10 per cent of their time on assignments that far away.

Considering their professional training, a surprising number, only half, are members of a business or professional organization. Similarly, this group does not appear to be particularly active in civic and community affairs, and when they do participate, they devote most of their time to church and charitable activities. Their employers are apparently unconcerned by this, for about half of the respondents report that their company does not actively encourage participation in community life. Reading and working around the house seems to take up most of the free time of the members of this group; and as expected, the persons they entertain in their homes come mainly from the neighboring communities.

2. The Group Attitude

The group is surprisingly homogeneous in its attitudes toward the Greater Boston area and its problems. The region's educational institutions and cultural heritage are extremely important to these alumni, and for most, it was an important influence in their decision to live near Boston. These considerations were even ranked above friends, family, and job opportunities. Taxes and politics on the other hand, ranked first among the unfavorable influences working against a decision to live in the Boston Metropolitan Area.

Though well over half reported that being near Boston was an important factor in their decision to accept their present job, very few of the respondents indicated that they would care to live nearer to Boston proper than they presently do. In evaluating communities, the school system was given more first choices than was any other factor, but the kind of housing available was actually cited more often than any other.

With respect to business affairs, the supply of technical personnel in the area was considered the most favorable factor affecting the corporate success of their company. The political climate was overwhelmingly mentioned as the most detrimental.

For Greater Boston as a whole, the respondents feel that transportation problems, tax levels, politics and inefficient government in that order constitute the major area problems. A surprising number, one in every five, cited New England Attitudes as a detriment to the development and character of the area.

3. The Business School Graduate as a Citizen

The main conclusion that emerges is that the talent of the business school alumni is an under-used resource in the Greater Boston area. The reasons for this which are to be inferred from the responses are:

1. lack of company encouragement;
2. preference to live outside the City of Boston in order to avoid its political and economic problems;
3. lack of faith in Boston's civic and political leadership;
4. inexperience in how to be effective in political affairs; and
5. general preoccupation with business and family affairs to the exclusion of civic and public life.

The men who make up this group are well educated, responsible in business, successful financially, and well established by family and other community standards. Furthermore, they have strong opinions on the problems which beset the area and on the obstacles to its development. But while their potential for community service is great, business school alumni do not seem inclined to participate actively in the search for solutions to these problems. This is to be deplored, for as a group, they are highly educated and professionally skilled. The authors of this report do not assume responsibility for suggesting or designing a program aimed at enlargening the scope of civic participation by this group. But the facts presented here indicate the need for such a program and point the way for any who wish to develop and promote it.

II. AN ANALYSIS OF THE FACTUAL SECTION OF THE QUESTIONNAIRE

Introduction

The first section of the questionnaire sought factual information about the respondents. The questions covered such matters as age, childhood, home, income, occupation, size of employing firm, past and present town of residence, marital status, graduate school, etc. They were designed to provide a broad, rather than a detailed, picture of the respondents. The response to all but a few questions was good and provides a sufficiently accurate picture of the group.

The following sets forth the major findings of the factual section. In each case the comments are preceded by a statistical tabulation of the answers received. The numbering of the paragraphs follows the numbering in the questionnaire. The responses have been consolidated for the four universities covered. While there are some important differences in responses, depending on the university attended, it was felt more worthwhile to provide a picture of the entire group and to deal with such differences in a separate report if desired.

1. Age:

Age Group	Number	Per Cent
20-24	5	.4
25-29	161	14.5
30-34	208	18.8
35-39	178	16.0
40-49	283	25.7
50-59	196	17.6
over 60	71	6.4
No ans.	7	.6
Total	1,109	100.0

A broad cross section of men at various stages in their business careers was provided by the survey. Practically all of the men had finished their formal education and were at a variety of age levels, up to and including retirement The age groups were divided about evenly between those under 40 years of age and those over; 60 per cent were

between 30 and 50 years of age; about 15 per cent were under 30; and 24 per cent were over 50. Almost none were less than 25 years old, while about 6 per cent were over 60.

2. Graduate School:

University	Questionnaires Mailed	Questionnaires Returned	Per Cent Responding	Per Cent Responses
Harvard	2,200	850	37.7	76.7
M.I.T.	65	38	58.4	3.3
Northeastern	482	98	20.3	8.8
B.U.	338	101	29.9	9.2
Two of the above	--	22	--	2.0
Total	3,085	1,109	35.9	100.0

Graduates of the Harvard Business School received just over 70 per cent of the questionnaires and accounted for over 75 per cent of the responses. Harvard graduates thus dominate the sample. This was unavoidable, for as noted above, the questionnaires were sent to all business school graduates residing in the Greater Boston area.

3. Youth Spent Near Boston: (Question: "Did you spend over seven of the first ten years of your life in a city or town within 30 miles of Boston?")

Answer	Number	Per Cent
Yes	641	57.9
No	462	41.6
No Ans.	6	0.5
Total	1,109	100.0

While most of the group were native to Greater Boston, over 40 per cent of the respondents did not spend their childhood in this area.

4. Family:

A. Marital Status

	Number	Per Cent
Married	985	88.9
Widower	12	1.9
Separated	1	--
Bachelor	93	8.5
Divorced	7	.7
No Answer	1	--
Total	1,109	100.0

An overwhelming proportion of this group, amounting to almost 90 per cent, is currently married. About 8 per cent are bachelors, 2 per cent are widowed, and fewer than 1 per cent are currently divorced or separated. No information was sought on the number who had been divorced and remarried.

B. Number of Children

Number of Children	Number	Per Cent
0	174	15.7
1	325	28.4
2	229	20.7
3	112	10.1
4	36	3.3
5	15	1.3
6	4	.4
7	1	--
No ans.	223	20.1
Total	1,109	100.0

C. Age of Children

Age Group	Number	Per Cent
0-9	364	32.8
10-17	105	9.5
18 or older	113	10.2
0-9 and 10-17	153	13.8
0-9 and 18 or older	5	.5
10-17 and 18 or older	86	7.7
0-9 and 10-17 and 18 or older	23	2.1
No Answer	260	23.4
Total	1,109	100.0

The respondents appeared to have significantly smaller families than the national average. Fifty per cent of the respondents had either one or two children. Ten per cent had three children, and only five per cent had four or more. Also, almost 60 per cent of the respondents indicated that all of their children were less than 18 years of age.

5. Principal Place of Residence:

A. Present Town of Residence

Rank	Town	No.	Rank	Town	No.
1	Newton	103	16	Arlington	18
2	Boston	102	17	Dedham	17
3	Wellesley	90	18	Framingham	16
4	Cambridge	61	19	Dover	15
5	Brookline	57	20	Hingham	15
6	Lexington	40	21	Quincy	15
7	Weston	39	22	Wayland	15
8	Needham	38	23	N. Andover	14
9	Concord	34	24	Beverly	13
10	Belmont	33	25	Watertown	13
11	Winchester	32	26	Reading	11
12	Milton	26		Other Towns	233
13	Marblehead	21			
14	Lincoln	19		Total	1,109
15	Melrose	19			

This group is heavily concentrated in the residential suburbs west of Boston. Over 50 per cent live in the towns of Newton, Wellesley, Brookline, Lexington, Weston, Needham, Concord, Belmont, Winchester, Lincoln, Arlington, Dedham, Framingham, Dover, and Wayland. Another significant group, 15 per cent, live either in Boston or Cambridge. The remainder are widely scattered among the remaining towns in the Greater Boston Area.

B. Home Ownership

Answer	Number	Per Cent
Yes	831	75.0
No	259	23.4
No ans.	19	1.6
Total	1,109	100.0

Three quarters of the respondents own their own homes.

C. Years in Present Town

Years	Number	Per Cent
0-3	389	35.1
4-6	196	17.6
7-9	138	12.4
over 9	366	33.0
No ans.	20	1.9
Total	1,109	100.0

The respondents are almost evenly divided between relative newcomers to their present towns of residence, those who have been there a moderate period, and old, well-established residents.

Thirty-five per cent have lived in their present town of residence for three years or less, another 30 per cent have been there from four to nine years, and 33 per cent have been there for ten or more years.

This sample, therefore, represents not only new citizens of towns but also a large number who have lived in one town for a substantial period and found it sufficiently attractive to remain there.

6. Income: (Question: "What was the gross combined income of you and your wife, if married, in 1958?")

Amount	Number	Per Cent
Under $5,999	48	4.3
6- 9,999	313	28.3
10-14,999	288	26.0
15-19,999	138	12.4
20-29,999	156	14.1
30-59,999	106	9.5
Over 60,000	44	4.0
No ans.	16	1.4
Total	1,109	100.0

The family income of the respondents was far above the national median average of about $6,200 per year. Only 4 per cent received a gross family income under $6,000, while 4 per cent had a gross family income of over $60,000. More than 60 per cent had over $10,000 per year, and more than 25 per cent received over $20,000 gross family income per year. The figures represent combined salary and other income of husband and wife and although some proportion is undoubtedly attributable to inheritance or marriage, no attempt was made to determine these sources.

7. Type of Employment:

Rank	Industry	Number	Per Cent
1	Electrical Machy., Equip. & Supplies Mfg.	124	11.4
2	Education Services	79	7.3
3	Insurance	73	6.7
4	Investment, Security & Commodity Brokers, Dealers and Exchanges	68	6.2
5	Banking	58	5.8
6	Chemicals & Allied Products Mfg.	42	3.8
7	Wholesale and Retail Trade	42	3.8
8	Management Consultants	39	3.5
9	Accounting, Auditing & Bookkeeping Services	35	3.1
10	Other Finance Services	34	3.0

(Continued)

Rank	Industry	Number	Per Cent
11	Miscellaneous Mfg. Industries	31	2.8
12	Instruments & Related Products Mfg.	31	2.8
13	Fabricated Metal Products Mfg.	30	2.8
14	Other Professional Services	26	2.4
15	Machinery, except Electrical Mfg.	22	1.9
16	Paper & Allied Products Mfg.	22	1.9
17	Food & Dairy Products Stores & Milk Dealers	22	1.9
18	Other Public Utilities	19	1.6
19	Food and Kindred Products Mfg.	17	1.5
20	General Merchandise Stores	16	1.4
21	Apparel & Accessories Stores	13	1.2
22	Real Estate	12	1.1
23	Hardware, Lumber & Bldg. Materials Stores	11	0.9
24	Advertising Agencies & Advtg. Services	11	0.9
25	Military Services	10	0.8
	All others	205	18.8
	No Answer	16	1.2
	Total	1,109	100.0

Respondents are heavily concentrated in the manufacturing of technical products, in educational services, and in financial and other professional services. About 30 per cent are employed in various financial and professional service companies, including insurance, banking, investment, security, and commodity brokers, dealers and exchanges, management consulting, accounting, auditing, etc. Eighteen per cent are employed by manufacturers of electrical machinery, equipment and supplies, chemicals and allied products, and instruments and related products. Another 7 per cent are employed in the provision of education services. The remaining 25 per cent are widely scattered among miscellaneous types of employment.

8. City of Work:

Rank	City	Number	Rank	City	Number
1	Boston	610	11	Everett	9
2	Cambridge	117	12	Framingham	9
3	Waltham	58	13	Watertown	9
4	Newton	33	14	Lawrence Area	9
5	Quincy	16	15	Lowell	9
6	Rest of Mass.	16	16	Wayland	8
7	New England (not Mass.)	14	17	Brookline	7
8	Needham	13	18	Natick	7
9	Lynn	12	19	Walpole	7
10	Malden	10	20	Westborough	7

While 62 cities or towns were mentioned as places of work, Boston and Cambridge account for two thirds of all respondents. Waltham, Newton, and Quincy account for another 15 per cent. The remainder are widely scattered and include some 3 per cent who work entirely outside the Boston area.

9. Company Size: (Question: "Number of employees in your company?")

Number of Employees	Number Responding	Per Cent
1-100	310	28.1
101-500	184	16.6
501-1,000	99	8.9
1,001-5,000	239	21.5
over 5,000	241	21.6
No answer	36	3.3
Total	1,109	100.0

Forty-two per cent of the respondents work for large companies with 1,000 or more employees Half of these respondents work for very large companies with 5,000 or more employees. These figures include persons employed in branch offices of large national firms.

The next largest group, 28 per cent, work for small companies with 100 or fewer employees. The remaining 25 per cent work for medium size firms having 100 to 1,000 employees.

This wide representation of employing companies by different size groups indicates the size diversity of employment opportunities available in Boston for this group of men.

10. Function:

Classification	Number	Classification	Number
Business Firm	187	Personnel Mgt.	19
Finance	90	Ind. Engineering	19
Sales Mgt.	68	Educational	15
Selling	64	Government	13
Production Mgt.	49	Purchasing	13
Teaching College or University	49	Other Institutions	
All Other Engineering	43	Teaching, High or Grammar School	10
All other Acctg.	41	Military	7
Marketing	39	Clerical	4
Office Mgt.	38	Traffic Mgt.	3
Economic Research & Analysis	37	Buying	5
Plant Mgt.	36	Advertising Mgt.	6
Public Accounting	35	Advtg. Agency	6
Consulting	35	Credit Mgt.	7
Research	29	Public Relations	5
Mdse. Mgt.	27	Law	5
Investment Banking	25	Medicine	1
Commercial Banking	25	Editorial Work	1
		Farming	2
		Trainee	3
		No answer	38
		Total	1,109

The respondents are employed in some 40 different functional classifications principally of a business nature. Eighteen per cent are in selling, sales management, marketing or merchandise management. Seventeen per cent simply stated that they were employed in business firms. Thirteen per cent are employed in finance or investment banking. Thirteen per cent are in consulting, economic or other forms of research, or various types of engineering. Nine per cent are in production or plant

management or industrial engineering. Seven per cent are in public or other forms of accounting. Seven per cent are in various types of teaching or educational administration. At the other end of the spectrum, public relations, law, clerical work, medicine, newspapers, farming, and the military account for only 2 per cent of the group.

11. Echelon of Management: (Question: ("If you work in a business, would you classify yourself as being in Junior, Middle, Top, or not in Management?")

Echelon	Number	Per Cent
Junior	161	14.5
Middle	329	29.6
Top	375	33.9
Not In	113	10.2
No Answer	131	11.8
Total	1,109	100.0

This group is composed primarily of men having management responsibility. Almost 34 per cent of the group classify themselves as being in top management, 30 per cent in middle management, and 15 per cent in junior management positions. Twelve per cent did not answer the question, and 10 per cent indicated they were not in managerial positions.

12. Method of Commuting: (Question: "How do you usually get to work?")

Method	Number	Per Cent
Auto	670	61.1
Walk	37	3.4
MTA	67	6.1
Taxi	--	--
Railroad	136	13.5
Bus	--	--
Auto & RR	52	4.7
Auto & MTA	67	6.1
Other	80	5.1
Total	1,109	100.0

By far the largest number of men, 61 per cent, commute to work in their automobiles. The next largest group, 12 per cent, take the train. Six per cent travel by a combination of automobile and MTA. Another 6 per cent depend on the MTA alone. Five per cent travel by a combination of automobile and railroad. Three per cent walk to work and 5 per cent depend on other means of transportation. No respondents travel to work by either bus or taxi. This survey was conducted before the closing of the Old Colony Railroad and the opening of the Riverside Branch of the MTA. Answers to this question as of the present date, therefore, would probably show a greater dependence on the MTA and less dependence on the railroad. The high proportion of men who depend only on their automobiles to get to work undoubtedly has a bearing on the strong feelings expressed by this group on the state of public transportation and road facilities relative to getting in and out of Boston.

13. Commuting Time: (Question: "How much time per day do you usually spend commuting to and from work?")

Time to and From	Number	Per Cent
1-60 minutes	715	65.4
61-120 "	349	31.4
121-180 "	13	1.2
Over 180 "	5	.5
No answer	17	1.5
Total	1,109	100.0

Two thirds of the group indicated they take less than an hour commuting to and from work each day, and another 31 per cent stated they take from 1 to 2 hours.

14. Per Cent of Working time spent on job assignments over 30 miles from place of Business:

Per Cent of Time	Number	Per Cent of Replies
None	335	30.2
1-10	451	40.7
11-25	178	16.0
26-50	91	8.2
51-75	25	2.3
76-100	22	2.0
No Answer	7	.6
Total	1,109	100.0

Seventy-one per cent of the respondents spend less than 10 per cent of their working time on job assignments more than 30 miles from their principal place of business. Another 16 per cent spend 11-25 per cent of their time on such job assignments. The purpose of this question was to determine, together with the information on commuting time in Question 13, how much time the group might have available to devote to community, political or social activities. It is apparent from the replies, that traveling and commuting time do not take so much time as to leave little for such outside activities.

15 Active Membership in Business or Professional Organization:

Answer	Number	Per Cent
Yes	577	52.1
No	516	46.5
No Ans.	16	1.4
Total	1,109	100.0

Fifty-two per cent of the respondents indicated that they were active members of business or professional organizations. However, a large percentage, 47 per cent, indicated that they were not active members. Such a conclusion is somewhat surprising considering the high proportion of men working in technical or professional staff capacities who might be expected to take an active interest in at least one professional or business organization.

16. Company Encouragement to Participate in Community Service or Civic Activities:

(Question: "Does your Company actively encourage you to spend a portion of your time on community service or civic activities, not business or professional?")

Answer	Number	Per Cent
Yes	478	43.1
No	578	52.0
No Ans.	53	4.8
Total	1,109	100.0

Only 43 per cent of the respondents indicated that their companies actively did encourage them to participate in community service or civic activities. This is an interesting conclusion and one that it would be valuable to check by surveying major employers in the Boston area which we were unable to do as a part of this study.

17. Allocation of Time to Various Types of Activities:

A. Sleep and Personal

Per Cent of Time	Number	Per Cent of Answers
20-30	556	50.0
30-50	524	47.3
No Ans.	29	2.7
Total	1,109	100.0

B. Community and Civic

Per Cent of Time	Number	Per Cent of Answers
None	361	32 5
10-20	649	58.4
20-30	37	3.4
30-50	1	--
No Ans.	61	5.7
Total	1,109	100.0

C. Work

Per Cent of Time	Number	Per Cent of Answers
10-20	35	3.0
20-30	194	17.0
30-50	849	76 3
No Ans.	31	3.7
Total	1,109	100.0

D. Other Activities

Per Cent of Time	Number	Per Cent of Answers
10-20	840	75.7
20-30	174	15.7
30-50	38	3.4
No Ans.	57	5.2
Total	1,109	100.0

The picture that emerges is one of a group that spends almost half its time working and one third to one half of its time on sleep. While one third of the respondents do not participate in civic and community affairs at all, about 60 per cent of the respondents allocate between 10 and 20 per cent of their time to this activity. Three fourths of the respondents give up to 20 per cent of their time to "Other Activities."

18. Ranking of Time Spent on Community and Civic Activities:

Activity	Ranked First	Ranked Second	Ranked First or Second
Church	320	138	458
Charitable	230	179	409
Youth Serv.	104	129	233
Local Political	70	64	134
State Political	12	17	29
Fed. Political	7	14	21
No Answer	366	568	934
Total	1,109	1,109	2,218

In terms of time spent, church and charity affairs are by far the most important of the respondents' community and civic activities. Youth service activities such as Cub Scouts, Little League, PTA, and Junior Achievement rank next. These are followed in declining order by local, state and federal political affairs. Only seven respondents rank this last category first in terms of time spent.

19. Number of Community Service and Civic Activities in which the Respondents Participate:

Number	Number of Answers	Per Cent
None	260	23.6
1-3	526	47.3
4-6	128	11.5
7-9	28	2.5
No Ans.	167	15.1
Total	1,109	100.0

From the replies it may be concluded that this is not a "joining group" in terms of community affairs, any more than it is in business or professional organizations. Seventy per cent of the respondents either had no community service activities or took part in three or less.

20. Ranking of Other Activities in Terms of Time Spent:

Activity	Ranked First	Ranked Second	Ranked First or Second
Reading	318	251	569
Work Arhd House	323	200	523
Television	103	161	264
Part. Sports	177	110	227
Hobbies	79	122	201
Entertaining	45	106	151
Theatre, Movies	19	41	60
Spect. Sports	12	32	44
Other	21	21	42
Social Clubs	10	19	29
No Answer	62	67	129
Total	1,109	1,109	2,218

Reading was ranked either first or second in terms of time spent by the largest single group of respondents. This was followed closely by working around the house. Other activities in decreasing amounts of time spent included participative sports and hobbies. Very few indicated that either social clubs or spectator sports ranked high in time spent.

21. Entertaining at Home: (Question: When you entertain at home, what percentage of your guests come from communities within, or immediately adjacent to, your city or town?")

Per Cent	Number	Per Cent of Total
0-25	196	17.7
26-50	193	17.4
51-75	326	29.4
76-100	359	32.4
No Ans.	35	3.1
Total	1,109	100.0

Not surprisingly, respondents entertained guests at home primarily from the same or adjacent communities. Thirty per cent of the respondents indicated that most of their guests came from within or adjacent to their home towns.

III. ANALYSIS OF ATTITUDE SECTION OF QUESTIONNAIRE

Introduction

In contrast to the factual orientation in the first section of the questionnaire, the second set of 8 questions was intended to explore attitudes, particularly attitudes about Boston as a place in which to live, work, and do business. The responses show a consistent pattern of thinking which should be of considerable interest to business and political leaders in Greater Boston

1. Factors Influencing the Decision to Live Within 30 Miles of Boston:

	Number Responding			Per Cent Responding		
Factor	Fav.	Unfav.	No Infl.	Fav.	Unfav.	No Infl.
Education	823	10	274	74.5	.9	24.6
Culture	771	4	333	69.5	-	30.0
Friends near Boston	728	4	376	65.7	-	34.0
Family near Boston	705	22	380	63.2	-	34.0
Recreation	668	15	424	60.0	-	38.0
Job Opportunity	622	117	329	59.9	10.6	29.6
Housing	543	63	500	49.1	-	45.0
Transportation	470	152	486	42.5	13.7	44.8
Climate	362	198	548	32.6	17.9	49.3
Pay	300	188	619	26.0	16.9	55.4
Taxes	53	725	328	4.7	65.2	29.6
Politics	48	567	490	4.3	51.0	44.0

Of the favorable influences affecting the decision to live near Boston, education ranked first in the case of 75 per cent of the respondents. Culture, friends or family near Boston and recreation in that order were next.

Taxes and politics were the leading unfavorable influences and were mentioned, respectively, by 65 and 50 per cent of respondents.

Climate and pay apparently arouse mixed emotions. About half of the respondents indicated climate did not influence their decision. Thirty-three per cent said that it was a favorable influence and 18 per cent said it was unfavorable. Pay was less favorably viewed with only 26 per cent citing it as a positive influence and 55 per cent indicated it had no influence on their decision.

The fact that the group did not cite pay strongly as a favorable influence in their decision to live near Boston, despite the fact that incomes are unusually high, is interesting. It suggests that the respondents feel they could do as well or better elsewhere. This, plus the large number of non-native Bostonians in the sample suggests that many respondents may have consciously decided in favor of this area because of other values which are of equal or greater importance.

2. Did the prospect of living near Boston influence your decision to accept your present job?

Answer	Number Responding	Per Cent Responding
Favorable	619	55.8
Unfavorable	27	2.4
No Influence	433	39.1
No Answer	30	2.7
Total	1,109	100.0

Fifty-six per cent felt the prospect of living near Boston was a favorable influence in deciding to accept their present jobs. Another 40 per cent felt it had no influence. Only a handful, 2.4 per cent, felt it was an unfavorable influence. This is an extraordinary positive expression of opinion about the desirability of living in the Boston area.

3. In what three cities or towns within 30 miles of Boston would you most like to live?

The answers to this question were not tabulated. A preliminary examination of the cities and towns mentioned showed them to be so numerous that they could not be coded and entered for tabulating on the IBM card. The preliminary examination also reveals that no definite or readily interpreted pattern was likely to emerge.

4. Will you consider moving nearer to the center of Boston within the next 10 years?

The Respondent assumes that at the time of the move he has:

Children Under 12 at home and answers	No Children Under 12 at home and answers	Number Responding	Per Cent Responding
Yes	Yes	78	7.1
Yes	No	5	-
No	Yes	177	16.0
No	No	776	69.9
No Answer		73	6.6
Total		1,109	100.0

The major proportion of respondents, 70 per cent, would not consider moving nearer to the center of Boston in the next 10 years whether they have children under 12 at home or not.

However, almost 23 per cent would consider making such a move. Not surprisingly, 10 per cent of this group consists of persons without young children at home. The central Boston area simply is not an attractive place to raise young children for most of this group. It is, however, more attractive to a significant number of people who do not have young children to care for, such as couples with grown children or retired widowed or divorced persons.

5. Factors Making One Community More Attractive Than Another:

(Question: Rank 5 of the following factors in order of importance to you in making one community more desirable than another in which to live in or near Boston?")

Factors	Respondents Including Factor in First 5	Respondents Ranking Factor First
Real Estate Taxes	624	86
Zoning	475	
Type of Housing Available	757	186

(Continued)

Factors	Respondents Including Factor in First 5	Respondents Ranking Factor First
Friends Already in Area	531	187
People Same or Higher Income	404	--
Community Social Facilities	192	--
Geographical	355	--
School System	688	205
Trash & Garbage Collection	--	--
Police & Fire Protection	--	--
Yacht or Country Club Near	--	--
Fire Insurance Rates	--	--
Distance From Work	769	161
Convenience to Major Shopping Center	--	--
Religious Group in the Town	--	--

Distance from work was mentioned most frequently among the first five factors making one community more desirable than another. Thereafter, the factors in order of importance are: type of housing available, school system, real estate taxes, friends already in the area, zoning, and people of same or higher income.

Interestingly, the number of times the factors were ranked in first place differed from the frequency of their being cited in the top five. In this rating scheme, 18 per cent of the respondents ranked the school system as the most important single factor. Friends already in the area was put first by 17 per cent. Distance from work was the first consideration for another 14 per cent. Real estate taxes were the most important factor for 8 per cent.

Other factors, such as community social facilities, trash and garbage collection, police and fire protection, yacht or country club near, fire insurance rates, convenience of shopping centers, and the religious group in town, all rated far down the list in terms of influencing the choice of community.

6. Factors Influencing Firm's Success in Conducting its Business:

(Question: What factors present in the area within 30 miles of Boston most influence your firm's success in conducting its business?")

Factor	Very Favorable	Favorable	Unfavorable	Little or no Influence
Technical Personnel	350	254	4	499
Labor Supply	144	449	25	490
Port Facilities	35	82	26	965
Rail Facilities	39	214	31	826
Air Facilities	69	274	8	757
Political Climate	18	53	413	626
Financial Facilities	228	367	11	502

Technical personnel, financial facilities, labor supply, and air facilities in descending order are the four most favorable factors influencing the success of the respondents business. Seventy per cent of the respondents rated technical personnel as favorable or very favorable. Thirty-one per cent rated air facilities in the same manner. Rail and port facilities are considered less important.

Political climate is by far the most important single unfavorable factor mentioned. Thirty-seven per cent of the respondents singled it out. The unhappy implication of this rating is unavoidable, and a further consideration of it is made in the evaluation of the answers to Question 8, which follows.

7. Rank the 4 major problems affecting the town in which you live.

The answers to this question were not tabulated. Whereas the preceding questions and responses had a specific metropolitan orientation, this question focused on local problems. It was felt that the introduction of local considerations at this point would distract from the main purpose of the survey.

8. Problems Affecting the Greater Boston Area:

(Question: "Rank the 4 major problems affecting the Greater Boston area as a whole.")

Rank	Problem Cited	Per Cent Respondents
1	Transportation	75
2	Tax Level	64
3	Politics	44
4	Inefficient Government	24
5	New England Attitudes	21
6	Political Apathy	10
7	Business Climate	9
8	Lack of Regional Planning	8
9	Tax Structure	8
10	Labor Problems	4

Three thousand three hundred four answers were tabulated from the 1,109 questionnaires. At least one answer appeared on 991 questionnaires; two answers, on 925; three, on 803; and 585 questionnaires had four answers.

The responses to this question raised a problem of interpretation. Many phrases or words had to be combined and tabulated under a single heading. For example, transportation includes such citations as parking, roads, traffic, commuter costs, and MTA.

Three quarters of the questionnaires mentioned transportation as a problem. Taxes (levels and structure) were cited by over 70 per cent of the respondents and the politics-government combination by over two thirds of the respondents. Clearly, these three problems stand out among the issues that concern this group. But significantly, while 75 per cent of the questionnaires mentioned transportation, as many as 42.5 per cent of the respondents indicated that transportation exerted a favorable influence on their decision to live near Boston. (See Attitude Question No. 1.) The meaning of this conflict in the responses is not clear, but it suggests that many respondents who may have satisfactory transportation facilities themselves believe that the area as a whole is inadequately serviced.

While the transportation problem was cited more often than any other, the greatest number of first choices was given to the problem of taxes. But in contrast to transportation and taxes which were merely noted, the group documented its opinions of politicians and political leadership (or lack of it) with surprising candor. The respondents did not hesitate to add comments such as, "corrupt politicians", etc. Appendix B provides a sampling of the comments and indicates the flavor of the group reaction to this question.

Despite the strong feelings about politics, only 10 per cent of the questionnaires mention aneed for political education of the citizen or a need for an aroused civic spirit. This feeling corroborates, and in part explains, the lack of participation by this group in organized political activity which has already been noted elsewhere.

The group is somewhat concerned over social attitudes and pressures. Twenty-one per cent of the questionnaires consider the area problems to include the lack of vitality, "conservative old New England" attitudes, voter apathy, the need for a "crusading newspaper", religious pressure, and the activity of religious denominations.

In the category of responses which perhaps should receive more weight than the statistics show, 8 per cent call for area versus local planning, and see minor jealousies as real obstacles; 8 per cent are concerned over the financial situation of the community and state, suggesting the need for changes in tax structure and calling attention to the problem of increasing tax exemptions for institutions. Twenty-four per cent are critical of the costs of government mainly in terms of inefficiency and less so in terms of excessive services.

Only 5 per cent of the questionnaires mention poor business climate as a problem facing Greater Boston. To this should perhaps be added the 4 per cent that referred to the need to attract new business to the area. This relatively low rating for business climate is interesting in view of the quantity of "propoganda" which presents an unfavorable image of economic prospects and development of Greater Boston. Surprisingly, a very few, 4 per cent of the respondents, cite unions and the cost of labor. On the other hand, an almost equal number of the questionnaires call management to task for a lack of progressive thinking and a failure to pay high enough salaries to keep good executives.

To sum up, most of the responses were concerned with the problems that the group faces on a day-to-day basis--transportation, taxes, and

politics A small minority express concern over more deeply rooted problems, such as civic apathy and a lack of coordinated planning. Perhaps the most significant finding is that while there is a deep sense of dissatisfaction with current political behavior and the quality of elected representatives, business school alumni do themselves not participate in political or public affairs.

Appendix A:

SOME CROSS TABULATIONS OF QUESTIONNAIRE RESPONSES

Introduction

The following cross tabulations establish a positive correlation between the participation by business school graduates in community and civic affairs and their age, income, level in management, and their company's attitude toward such participation. Other tabulations not presented here show that size and industrial classification did not influence the company's expressed encouragement of its employees to participate in community service. Many other cross tabulations could, of course, have been made, but for the purposes of this report, the correlations presented here seem to be of greatest interest.

1. Age and Income:

	Family Income (in thousands of dollars)									
Age	Under 5,999	6,000 to 9,999	10,000 to 14,999	15,000 to 19,999	20,000 to 29,999	30,000 to 59,000	Over 59,000	No Ans.	Total Resp.	Percent Resp.
under 30	28	104	28	2	1	1	--	2	166	15.0
30 to 34	9	78	75	22	15	7	--	3	209	18.8
35 to 39	4	56	56	27	16	14	3	1	177	16.0
40 to 49	3	40	79	41	67	36	13	4	283	25.5
50 to 59	1	17	39	35	47	33	20	4	196	17.7
over 59	2	16	10	11	10	13	8	1	71	6.4
No Ans.	1	2	1	--	--	2	--	1	7	.6
All Ages	48	313	288	138	156	106	44	16	1,109	--
Percent	4.3	28.2	26.0	12.4	14.1	9.6	4.0	1.4	--	100.0

The cross tabulation between age and income shows that while on the average the respondent's income tends to increase as his age increases, the income spread is greater among the older graduates than it is among the younger.

Most graduates start their careers with family incomes of less than $10,000 a year, but move quickly into a higher bracket. To illustrate, 80 per cent of the respondents under 29 had an income of less than $10,000 a year but only 40 per cent of the graduates between 30 and 35 years of age remain in this income bracket. Of the respondents who have achieved age 40, only 15 per cent have family incomes of less than $10,000 a year.

But age alone did not bring increases in income. Many of the respondents failed to keep pace as they grew older, with the result that the respondents in the older age groups are more evenly spread across the income distribution than they are in the younger age groups. To illustrate, in the youngest age group, under 29, 162 of the 166 respondents are bunched at less than $15,000 per year. In contrast, the 196 respondents between age 50 and 59 who do have a higher average income are not bunched overwhelmingly in the upper income brackets

An interesting phenomenon is the relatively small proportion of the respondents who earn between $15,000 and $20,000 a year. The number in this bracket, 138, is smaller than it is in either the next higher or next lower income category. This suggests that the $15,000 barrier may be a fairly difficult one to crack, but once the respondent has broken through it, he seems to move to the even higher levels of income more easily.

2. Age and Level of Management Responsibility:

	Echelon of Management			Not in	No.	Total	Percent
Age	Junior	Middle	Top	Management	Ans.	Resp.	Resp
under 30	73	34	13	26	20	166	15.0
30 to 34	46	73	40	32	18	209	18.8
35 to 39	18	80	51	14	14	177	16.0
40 to 49	17	89	125	21	31	283	25.5
50 to 59	7	42	111	8	28	196	17.7
over 59	--	8	33	10	20	71	6.4
No Ans.	--	3	2	2	--	7	.6
All Ages	161	329	375	113	131	1,109	--
Percent	14.5	29.7	33.8	10.2	11.8	--	100.0

Among the respondents who consider themselves to be in management, there is a strong correlation between age and the level of management. Of the 161 respondents who classified themselves as being in junior management, 119 were drawn from two youngest age brackets. The three age groupings which include all of the respondents between 30 and 50 years of age contribute 242 of the 329 graduates in middle management, while the top echelon is drawn overwhelmingly from the two brackets covering the respondents age 40 to 60.

3. Company Encouragement and Time Devoted to Civic Affairs:

Company Encouragement	Percent of Respondent's Time Spent in Community Service: none	10-20	20-30	30-50	No Ans.	Total Resp.	Percent Resp.
Yes	95	337	22	--	24	478	43.1
No	250	284	12	--	32	578	52.1
No Ans.	16	28	3	1	5	53	4.8
Total Responding	361	649	37	1	61	1,109	--
Percent Responding	32.6	58.5	3.3	--	5.5	--	100.0

There appears to be a fairly strong correlation between company encouragement and the respondents' participation in civic affairs. Forty-three per cent of all respondents said their company actively encourages participation. In this group, there were 478 graduates and 70 per cent of them indicate that they give between 10 and 20 per cent of their time to civic affairs. On the other hand, of the 578 who report their company as giving no active encouragement, over 40 per cent indicate no participation whatsoever and less than half of them give between 10 and 20 per cent of their time to community life.

Because the nonparticipant may tend to see his company as not encouraging participation, it would have been helpful if the company's own image of itself could have been checked. This was not possible, and the correlation between company encouragement and individual participation must therefore be interpreted with regard to this alternative possibility.

4. Age and Time Spent on Community and Civic Activities:

Age	Percent of Respondent's Time Spent in Community Service none	10-20	20-30	30-50	No Ans.	Total Resp.	Percent Resp.
under 30	78	77	--	--	11	166	15.0
30 to 34	95	93	6	1	14	209	18.8
35 to 39	54	110	4	--	9	177	16.0
40 to 49	65	194	11	--	13	283	25.5
50 to 59	50	132	9	--	5	196	17.7
over 59	18	39	6	--	8	71	6.4
No Ans.	1	4	1	--	1	7	.6
All Ages	361	649	37	1	61	1,109	--
Percent	32.6	58.5	3.3	--	5.5	--	100.0

More time is given to community and civic affairs by the older members of the group than by the younger ones. In fact, among those who responded in the youngest age bracket, just over half give no time whatsoever to community activity. The participation rate increases steadily and reaches its peak in the 40 to 49 age group. In this group, three quarters of those who answered the question gave at least 10 per cent of their time to civic affairs.

5. Postion in Management and Time Spent on Community Affairs:

Echelon of Management	Percent of Respondent's Time Spent in Community Service none	10-20	20-30	30-50	No Ans.	Total Resp.	Percent Resp.
Junior	74	74	4	--	9	161	14.5
Middle	115	192	8	1	13	329	29.7
Top	91	248	18	--	18	375	33.8

(Continued)

Echelon of Management	Percent of Respondent's Time Spent in Community Service				No Ans.	Total Resp.	Per Cent Resp.
	none	10-20	20-30	30-50			
Not in Management	38	65	3	--	7	113	10.2
No Answer	43	70	4	--	14	131	11.8
Total Responding	361	649	37	1	61	1,109	--
Percent Responding	32.6	58.5	3.3	--	5.5	--	100.0

Cross Tabulations 2 and 4 above establish correlations between age and management responsibility, and age and participation in community and civic affairs. It follows, therefore, that a positive correlation must exist between level of management and time spent in community service.

But taken together, these cross tabulations show that age is a more important influence affecting participation in community affairs than is a high position in management. This can, for example, be shown by reference to respondents in the 35 to 49 age group.

1. Of the 380 respondents in this age group who are in management, 90 per cent said they are in middle or top management, but

2. Only 60 per cent of all persons in middle management give 10 per cent or more of their time to these activities, whereas

3. Seventy-two per cent of all persons 35 to 49 give 10 per cent or more of their time to civic affairs.

Hence, the conclusion that age is a greater influence than management responsibility in participation in community life.

Appendix B:

A SAMPLING OF COMMENTS ON GREATER BOSTON'S PROBLEMS

"I have long felt the greatest single contributor to Boston's decline and demise to be one of attitude. That same attitude that permits legislation to remain in the disinterest of industry and business, taxes, real estate and overunionization being the major deterrents to commercial growth. One may love Boston but suffers fatigue of being helpless to halt its death by self-strangulation."

"Boston and surrounding communities will never improve until the population demands honesty in politics and shows a desire to have fair equal taxation and live within their 'community means'. Stop spending future generations' tax money--pay as you go. Get the idea out of the politicians' minds that the one way to get re-elected is to spend more money--this applies to Republicans as well as Democrats."

"There is no coordination between the towns for solving problems common to all. Furthermore, and even if the existence of a problem is realized, those who are assigned to solve it are 'politicians' rather than nonpolitical experts."

"There are too many political decisions made favoring small pressure groups and for expediency rather than facing the problems and solving them for the good of the people."

"There are no other problems that the automatic free competitive society we live in would have to worry about if the politician would pull his weight on the oar."

"Politicians cannot think ahead of their own personal well-being. The area needs young, capable people to run efficient state and local governments. Boston, a darn good area, has no problems that cannot be solved by intelligent administration."

"It is my own opinion, that the extremely low level of the political mind of city and state has gotten us into our present jam. Witness

the resolution of the Boston City Council that jet planes should be kept out of Logan Airport."

"I believe Massachusetts generally and Boston in particular is 'going for broke' for lack of honest, intelligent political leadership. Some of Boston's problems might be solved if the political unit were enlarged to include the suburbs."

"Business should lead public interest in politics."

"Lack of interest by voting public in pushing for better government and economies in local spending programs."

"Political graft and bureaucracy. Inequity in taxes from real estate. Both driving business and people out of the city to other areas and states."

"Morally decadent politicians and electorate. Reactionary thinkers (management) a la State Street, Defeatist attitude in leadership. 'Something for nothing' attitude of general population."

"Sponging and leaning on government by lazy and chiseling citizens content to drift into socialism and inflation, the 'periphery' callously indifferent to the 'heart' of Greater Boston, and excessive taxation (State and City) -- real deterrent to industrial growth."

"Lack of civic spirit to reduce excessive overhead in government, railroad, MTA, too much hurrah for me and to hell with everyone else."

"Economically isolated, no native natural resources and hence must develop more brain power oriented industry."

"'Status Quo' thinking."

"Type of people -- old New England businessmen and South Boston politicians -- backward attitude of both groups toward progress."

"General dirtiness of area. General smugness of area."

"Lack of knowledge, therefore of creative pride in Boston's (previous) culture and history."

"Lack of bold, long range planning on a broad, Metropolitan area bais, which I think stems from lack of determined, imaginative leadership, as in Pittsburgh."

"Excess number of political subdivisions in a compact area. (Need for one large metropolitan area)."

"Stimulate economic growth by analyzing some detriments that business in this area must face. The advantages are fairly obvious. It is the large negative factors (particularly government) that need study."

"Cowardly planning, zoning, building codes due to politicians and merchants holding control."

"The lack of initiative in planning, etc., has made some of us who were once interested sorry to associate with the type of governmental personalities prevalent in Massachusetts."

"Weak-kneed newspapers which fail to publish the truth about corruption and waste in city and state government."

"Lack of workers' unions, resulting in low wages in insurance, banking, department stores, clothing industry."

"Inadequate roads and generally foul condition of MTA equipment which on all lines (except the East Boston 'Dog and Race tracks' line) is so bad that people just will not use the service."

"I believe one of Boston's and New England's greatest problems is trying to make up, now, for the sins of industrial mismanagement by absentee owners of 1850-1930 when little if any profit was plowed back into business to obviate obsolescence."

"Too great influence of Church in City and State Politics."

"Excessive dependence on military business which is feast or famine."

"Depressed pay scales in many professional, junior and management areas with exodus of many valuable people."

"Need more population in area to avoid shipping long distance to a sizeable per cent of total United States market. This is so when one plant is in competition with other plants in the same company."

endix C:

SURVEY QUESTIONNAIRE AND LETTER OF TRANSMITTAL

GREATER BOSTON ECONOMIC STUDY

GRADUATE SURVEY QUESTIONNAIRE

ge: ______

heck graduate school attended:
arvard ______ Northeastern ______
.I.T. ______ B.U. ______

id you spend over seven of the first ten years of our life in a city or town within 30 miles of Boston?
Yes ______ No ______

amily:
. Marital Status: Married ______ Widower ______
Separated ____ Bachelor ____ Divorced ____
. Children: Number living at home: ______
Number boarding at school or college ______
Other ______
. Age span of children:
Number 0–4 ____ Number 14–17 ____
Number 5–9 ____ Number 18–21 ____
Number 10–13 ____ Number over 21 ____

rincipal place of residence:
A. Name of present Town or City of Residence
______
B. Do you own your house? Yes ____ No ____
C. Years you have lived in A. above:
0- 3 years ____ 7 - 9 years ____
4 - 6 years ____ over 10 years ____
D. Name of last previous Town of Residence:
______
E. List Cities or Towns of residence during last 10 years (list most recent first):
1. ______ 4. ______
2. ______ 5. ______
3. ______ 6. ______

6. What was the gross combined income of you and your wife, if married, in 1958 (check one):
Under - $ 5,999 ____
$ 6,000 - $ 9,999 ____ $20,000 - $29,999 ____
$10,000 - $14,999 ____ $30,000 - $59,000 ____
$15,000 - $19,999 ____ Over $59,000 ____

7. Type of employment (see attached List No. 1):
Industry ______ Code ______

8. City in which you work: ______

9. Number of employees in your Company:
1 - 100 ____ 501 - 1000 ____
101 - 500 ____ 1000 - 5000 ____ Over 5000 ____
(If you are in a branch office or other subdivision of a firm give overall figures for whole company. If you are in a subsidiary company, give figures for subsidiary only.)

10. Your function: (see attached list No. 2)
Function ______ Code ______

ou work in a business, would you classify your-
' as being (check one):
ior Management ______ Top Management ______
dle Management ______ Not In Management ______

v do you usually get to work? (check more than
if a combination is used):
o ______ Taxi ______
k ______ Railroad ______
'.A. ______ Bus (not M.T.A.) ______

v much time per day do you spend commuting to
from your work?
0 minutes ______ 121 to 180 minutes ______
o 120 min. ______ over 180 minutes ______

roximately what percentage of your working time
you spend on job assignments more than 30 miles
n your place of business:
None ______ 26% – 50% ______
% – 10% ______ 51% – 75% ______
% – 25% ______ 76% – 100% ______

you an active member of any business or profes-
nal organization (serve on committees, hold office,
ttend meetings regularly)? Yes ______ No ______
v Many? ______

es your company actively encourage you to spend
ortion of your time on community service or civic
ivities? (Not business or professional):
Yes ______ No ______

roximately how much of your time each week do
spend on the following (check one in each of the
r categories):
Sleep & Personal Time: 20% – 30% ______
30% – 50% ______
Community & Civic Activities (such as Church,
Charitable, PTA, Political, etc) None ______
10–20% ______ 20–30% ______ 30–50% ______
Work (including commuting, business reading,
lunch and other working meals, professional ac-
tivities): 10–20% ______ 20–30% ______ 30–50% ______
Other Activities (including hobbies, theatre,
T.V., etc.) 10–20% ______ 20–30% ______ 30–50% ______

18. **Of the time spent on Community and Civic activities recorded as Item B in No. 17 above, please rank the following in order of time spent and check where activity occurs:**

Activity	Rank	At City of Work	At City of Residence
A. Charitable	______	______	______
B. Church Activities	______	______	______
C. Youth Services (such as Cub Scouts, Little League, PTA, Jr. Achievement, etc.	______	______	______
D. Federal Political	______	______	______
E. State Political	______	______	______
F. Local Political	______	______	______

19. **Number of community service organizations and civic activities ranked in No. 18 above in which you participate:** None ______ 1–3 ______, 4–6 ______, 7–9 ______.

20. **Of the hours spent on** Other Activities **recorded as Item D, No. 17, please rank the following in order of time spent:**
A. Hobbies ______
B. Participative Sports ______
C. Spectator Sports ______
D. Social Clubs ______
E. Theatres, Movies ______
F. Entertaining at Home ______
G. Working around the house ______
H. T.V. ______
I. Reading ______
J. Other (specify) ______

21. **When you entertain at home, what percentage of your guests come from Communities within, or immediately adjacent to, your City or Town?**
to 25% ______
26% to 50% ______
51% to 75% ______
76% to 100% ______

e following section is concerned with questions of opinion. Would you please read all of the following paragraphs ore answering any of the questions.

ease indicate the influence of each of the follow- factors in your decision to locate within 30 miles Boston (check whether influenced favorably, un- orably, or not at all).

	Favor-able	No In-fluence	Unfavor-able
nily living ound Boston			
ıcation			
ısing			
nsportation			
creation			
/			
nate			
Opportunity			
ture			
itics			
es			
ends (living ound Boston)			

the prospect of living near Boston influence your ision to accept your present job?
orable influence ____ Little or no influence ______ ,
avorable influence ________ .

what three Cities or Towns within 30 miles of ston would you most like to live? (List in order riority.)

____
____
____

you consider moving nearer to the center of ston within the next 10 years? (check both A. B.):

If, at the time of the move, you have children er 12 years of age living at home?
Yes ________ No ________

If, at the time of the move, you have no children er 12 years of age living at home?
Yes ________ No ________

5. Rank 5 of the following factors in order of importance to you in making one community more desirable than another in which to live in or near Boston:

Real Estate Taxes ____________
Zoning (large lots) ____________
Type of Housing Available ____________
Friends & Acquaintances already living in area ____________
People in same or higher income level predominate in town ____________
Community social facilities ____________
Geographical ____________
School System ____________
Trash and Garbage collection ____________
Police and Fire Protection ____________
Yacht & Country Club in vicinity ____________
Fire Insurance Rates ____________
Distance from work ____________
Convenience to major Shopping Center ____________
Religious group in the Town ____________
Other — (specify) ____________

6. What factors present in the area within 30 miles of Boston most influence your firm's success in conducting its business:

	Very Favor-able	Favor-able	Unfavor-able	Little or no Influ-ence
Technical Personnel				
Labor Supply				
Port Facilities				
Rail Facilities				
Air Facilities				
Political Climate				
Financial Facilities				
Other (specify)				

7. Rank the 4 major problems affecting the town in which you live: 1. ____________ , 2. ____________ ,
3. ____________ , 4. ____________

8. Rank the 4 major problems affecting the Greater Boston Area as a whole:
1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

USED IN ANSWERING QUESTION 7) **LIST NO. 1**

CLASSIFICATION BY INDUSTRY

URE, FORESTRY & FISHERIES

NG
ULTURAL SERVICES
TRY, EXCEPT LOGGING
RIES

MINING
MINING
PETROLEUM AND NATURAL GAS
UCTS
MINING AND QUARRING

CTION

RUCTION AND GENERAL
RACTORS
AL TRADE CONTRACTORS

TURING

AND KINDRED PRODUCTS
CO
LE MILL PRODUCTS
EL AND RELATED PRODUCTS
R AND PRODUCTS, EXCEPT
ITURE
TURE AND FIXTURES
AND ALLIED PRODUCTS
ING, PUBLISHING AND ALLIED
STRIES
CALS AND ALLIED PRODUCTS
LEUM AND COAL PRODUCTS
R PRODUCTS
IER AND LEATHER PRODUCTS
, CLAY, AND GLASS PRODUCTS
RY METAL INDUSTRIES
CATED METAL PRODUCTS
NERY, EXCEPT ELECTRICAL
RICAL MACHINERY, EQUIPMENT,
SUPPLIES
PORTATION EQUIPMENT
UMENTS AND RELATED PRODUCTS
LLANEOUS MANUFACTURING
STRIES

BUSINESS SERVICES

58 ADVERTISING AGENCIES AND ADVERTISING SERVICES
59 MARKET ANALYSTS
60 MANAGEMENT CONSULTANTS
61 OTHER BUSINESS SERVICES

TRANSPORTATION, COMMUNICATION, AND OTHER PUBLIC UTILITIES

31 RAILROADS
32 BUS LINES AND TAXICABS
33 TRUCKING
34 WATER TRANSPORTATION
35 AIR TRANSPORTATION
36 OTHER TRANSPORTATION AND TRANSPORTATION SERVICES, INCLUDING FORWARDING
37 WAREHOUSING & STORAGE
38 TELEPHONE AND TELEGRAPH
39 RADIO AND TELEVISION BROADCASTING
40 OTHER COMMUNICATION SERVICES
41 OTHER PUBLIC UTILITIES

WHOLESALE AND RETAIL TRADE

42 WHOLESALE TRADE, INCLUDING EXPORTERS, IMPORTERS, JOBBERS, MANFACTURERS' SALES BRANCHES AND OFFICES, AGENTS, AND BROKERS
43 FOOD AND DAIRY PRODUCT STORES AND MILK DEALERS
44 GENERAL MERCHANDISE STORES
45 APPAREL AND ACCESSORIES STORES
46 FURNITURE, HOME FURNISHING, AND EQUIPMENT STORES
47 MOTOR VEHICLE AND ACCESSORIES STORES AND FILLING STATIONS
48 DRUG STORES
49 EATING AND DRINKING PLACES
50 HARDWARE AND LUMBER AND BUILDING MATERIALS STORES
51 OTHER RETAIL STORES

FINANCE, INSURANCE, AND REAL ESTATE

52 BANKING
53 CREDIT AGENCIES
54 INVESTMENT, SECURITY AND COMMODITY BROKERS, DEALER, AND EXCHANGES
55 OTHER FINANCE SERVICES
56 INSURANCE
57 REAL ESTATE

PERSONAL SERVICES

62 HOTELS, LODGING PLACES AND CAMPS
63 LAUNDERING, CLEANING AND DYEING SERVICES
64 MISCELLANEOUS PERSONAL SERVICES

AMUSEMENT, RECREATION, AND RELATED SERVICES

65 MOTION PICTURES
66 OTHER AMUSEMENT, RECREATION, AND RELATED SERVICES

PROFESSIONAL AND RELATED SERVICES

67 MEDICAL AND OTHER HEALTH SERVICES, INCLUDING HOSPITALS
68 LEGAL SERVICES
69 ACCOUNTING, AUDITING, AND BOOKKEEPING SERVICES
70 OTHER PROFESSIONAL SERVICES
71 EDUCATION SERVICES
72 NONPROFIT MEMBERSHIP ORGANIZATIONS INCLUDING BUSINESS, PROFESSIONAL, LABOR, CIVIC, FRATERNAL, POLITICAL, RELIGIOUS, AND CHARITABLE ORGANIZATIONS

GOVERNMENT

73 LOCAL
74 STATE
75 FEDERAL (CIVILIAN)
76 MILITARY SERVICES

USED IN ANSWERING QUESTION 10) **LIST NO. 2**

CLASSIFICATION BY FUNCTION

ADMINSTRATIVE (NO SPECIFIC NAL RESPONSIBILITY)

ESS FIRM (S)
RCH
ARY
RNMENT
ATIONAL
R INSTITUTION

NAL CLASSIFICATION

E MANAGEMENT
OMIC RESEARCH AND ANALYSIS
ICAL
MANAGEMENT
JCTION MANAGEMENT

12 PERSONNEL MANAGEMENT
13 TRAFFIC MANAGEMENT
14 MERCHANDISE MANAGEMENT
15 PURCHASING
16 BUYING
17 MARKETING
18 ADVERTISING MANAGEMENT
19 ADVERTISING AGENCY
20 SALES MANAGEMENT
21 SELLING
22 CREDIT MANAGEMENT
23 FINANCE
24 INVESTMENT BANKING
25 COMMERCIAL BANKING
26 PUBLIC ACCOUNTING
27 ALL OTHER ACCOUNTING

28 ACTUARIAL WORK
29 INDUSTRIAL ENGINEERING
30 ALL OTHER ENGINEERING
31 PUBLIC RELATIONS
32 CONSULTING

PROFESSIONAL AND OTHER

33 LAW
34 MEDICINE
35 TEACHING, COLLEGE OR UNIVERSITY
36 TEACHING, HIGH OR GRAMMER SCHOOL
37 EDITORIAL OR LITERARY WORK
38 FARMING
39 TRAINEE

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greater boston economic study committee

ASSOCIATES OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT

April, 1959

Dear Sir:

The enclosed questionnaire is designed to obtain for the Greater Boston Economic Study Committee some practical facts about you, as an executive working in the Greater Boston Area -- why you live where you do, how you get to work, where your children go to school, how much time you devote to community affairs, and how your age and salary level influence your attitudes and activities.

The Greater Boston Economic Study Committee is in the process of making a long range analysis of economic trends in the Greater Boston Area. As a part of this analysis, the Committee is deeply concerned with the human equation on which all development rests. Ultimately, our staff hopes to have a 'composite' picture of profile of Greater Boston's leadership of which you are a part. This profile will be used to analyze alternate objectives and policies in terms of their feasibility and acceptability to those of us who constitute the economic base.

We hope you will take a few moments now to fill in this survey questionnaire and return it in the enclosed envelope within the next ten days.

Sincerely yours,

Gregory B. Wolfe

Gregory B. Wolfe

K, CHAIRMAN GBESC
IOHN HANCOCK
NSURANCE COMPANY
ICKSON, VICE CHAIRMAN GBESC
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NCIS ADAMS, PRESIDENT
ANUFACTURING COMPANY
BLANCHARD, PRESIDENT
CH FOOTWEAR AND FLOORING COMPANY
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